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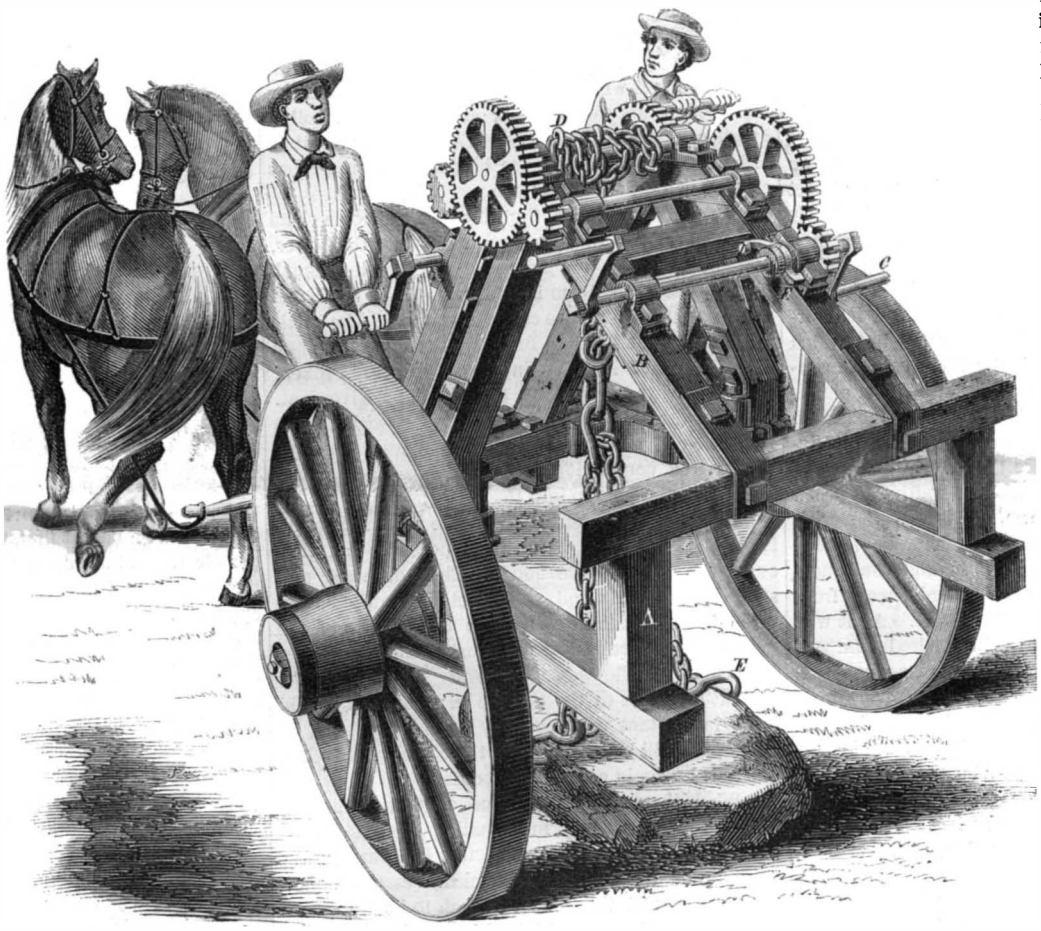
Improved Stone-lifting Machine.

The power-exerting machines which have recently been introduced into farming operations, are among the most useful and convenient assistants the agriculturist can have. Through them a great deal of labor is saved, and the work accomplished much more speedily.

The engraving which we publish herewith represents a powerfully-geared machine designed for raising stones, pulling stumps, loading heavy timber or logs on to sleds, or any other purpose that requires a great power, which can be easily managed by ordinary laborers. The machine consists of a very strong frame, A, mounted on wheels; this frame is surmounted by another wooden structure, B, which carries a system of gearing upon it. This gearing is so arranged that the handles, C, when turned, transmit a slow rotary motion to the axle or windlass, D, upon which the chain is wound. These chains connect to a shorter one which is fastened to the stone to be raised by two hooks, E. There are holes in the side of the stone, about half an inch deep, which have been drilled to receive the hooks in question, and when the latter are inserted and power applied to the winch handles, the stone is raised from its bed and may be carried to any point and deposited; there is to be a pawl (not shown in the engraving) working in the large wheel to prevent it from turning back when the load is hanging on the main chains. There is also a disconnecting clutch at F, by which one of the gears may be thrown out if necessary. The frame of the machine is strongly clamped to stand the severe strain it has to bear, and by having but two wheels it turns easier and has a clear space beneath in which the stone may hang while being conveyed to other parts of the field. Two men can raise a great weight with this system of gearing, and the efficiency of it is of course much increased when the number of assistants is doubled.

The above machine was invented by R. T. Hathaway, of New Bedford, Mass., and for further information address him at that place.



HATHAWAY'S STONE-LIFTING MACHINE.

The Expansive Force of Gunpowder.

An interesting experiment was made lately at Bridesburg, Pa., arsenal, under the supervision of Major Laidley, commanding, to ascertain whether a building for the filling or manufacture of cartridges could be constructed of an iron frame with wooden sides and tin roof, and if, in case of an explosion, the iron frame-work would remain standing. An iron framed building, with wooden sides and tin roof, twenty-three and a half feet square and sixteen feet in hight, was erected in the extreme end of the arsenal grounds, on the Delaware river. The woodwork upon the building was so constructed that the sides, by a heavy pressure, could be forced from the iron frame; from the outside they could not be pushed in by any force. In the building were six tables, each table containing about four boxes of cartridges. The ends of the cartridges pointing upwards were open. Boxes of powder were also on the tables. They were arranged the same as in a factory when the men are in the act of filling the cartridges. A galvanic battery was stationed at a distance from the building, and copper wires were run along on small poles and through one of the windows of the building, and thence into a powder box. Two of the sides of the building were torn from the iron, and thrown down. One was left remaining and the other partly down. The roof was lifted off and thrown a short distance. The boxes in the building contained eleven thousand five hundred cartridges and two barrels of powder.

The "Mystery" of a Boiler Explosion.

At a recent examination of a witness before a Coroner of Philadelphia, some "mysterious" circumstances, in connection with a steam boiler explosion were brought to light. The witness, Algernon Roberts, testified that he had examined portions of the exploded boilers at Messrs. Cornelius & Baker's Columbia-avenue factory, also at Morgan & Orr's establishment; the iron at Morgan & Orr's appeared to be in good condition. The witness exhibited a piece of iron from the exploded mud drum, which upon measurement proved to be about an eighth of an inch thick. To the mind of the witness that was a sufficient cause for the accident in that part of the boiler; the thinness of the iron was caused by corrosion; all the other iron examined seemed to be in a good condition. The "mystery" in this case, as in almost every other, was a simple deterioration of the drum from neglect, or rather the effect of time.

Large Mass of Copper.

Mr. J. B. Townsend, agent of the Minnesota Mine, has communicated the following facts regarding the large mass of copper found in 1857:—"The 'great mass' of the Minnesota Mine was discovered in February, 1857, between the adit and ten fathom level, or about 120 feet below the surface. It was imbedded in the belt of conglomerate which forms the foot-wall of the Minnesota vein. Previous to its discovery the regular vein at the junction of the trap and conglomerate had been removed. The foot-wall of the vein, at the place where the great mass was found, was perfect and regular as in other cases; the lode was also rich in mass copper. The great mass was discovered only by small strings or pieces of copper extending into the conglomerate. The mass itself was 45 feet in length, about 22 feet at the greatest width, and the thickest part was more than 8 feet. It was over 90 per cent copper, and weighed about 420 tuns. It required 13 months to complete the cutting up and sending it to the surface. Some 30 men were employed in cutting at a time. Several heavy blasts were necessary to loosen the mass from its bed. At the last blast or charge, 30 kegs of powder (750 lbs.) were used. The whole amount of powder consumed in the various trials was 95 kegs (2,375 lbs.) The principal features of this mass, of more than ordinary interest, were its great weight in one solid body, its remarkable purity, and its occurring outside of the regular vein in the conglomerate rock."

American Steamboat Engines and Models in England.

We find in a foreign contemporary the following paragraph respecting the adoption of plans of American steam vessels in England:—

"The first of two large steamers, intended for the passenger trade between Quebec and Montreal, is now in course of construction by Messrs. Barclay, Curle & Co., in their yard at Stobcross. They are being built from a fine New York model, and the work upon the first of them, the *Quebec*, is now in a forward state. Her dimensions are—Length of keel, 285 feet; breadth of iron hull, 34 feet; and 11 feet depth of hold. The decks are to project over the sides of the hull, and will be 60 feet across. On the main deck there will be a large and beautifully fitted

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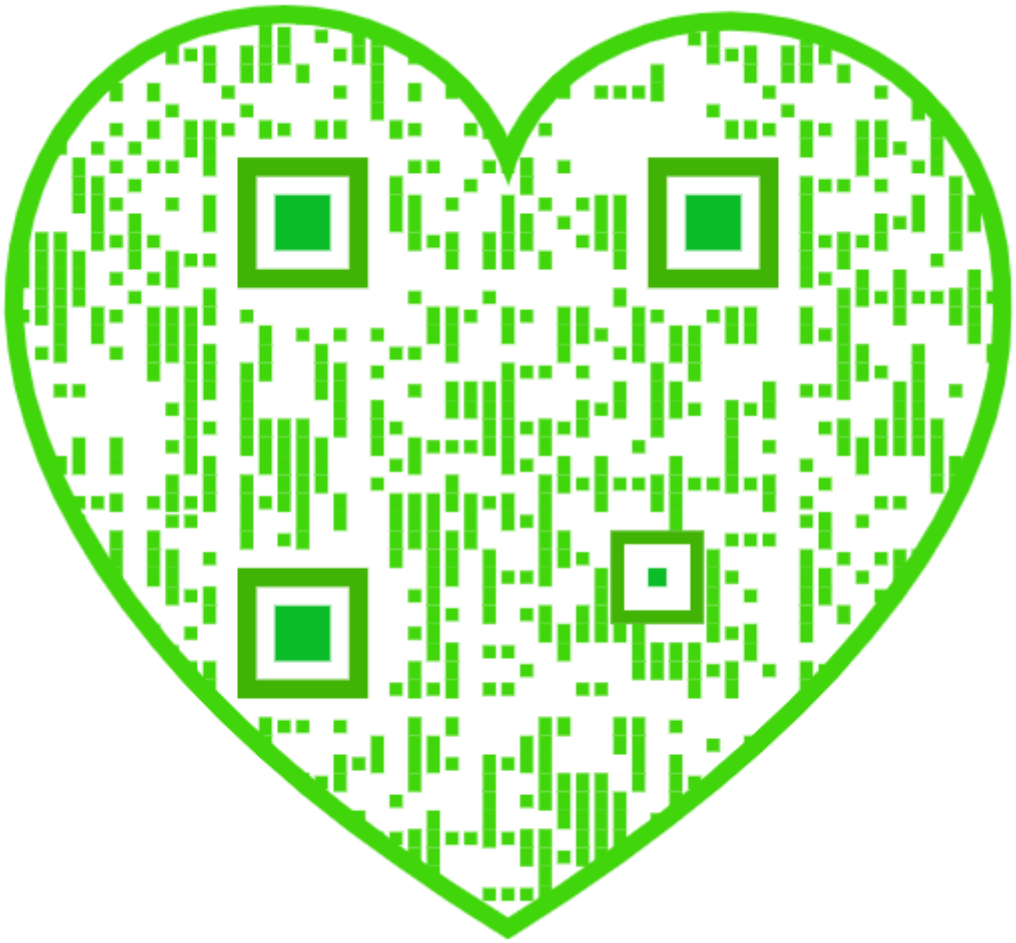

up ladies' cabin, offices, luggage rooms, engine room, &c. Above the main deck there will be another deck, also 60 feet broad, extending the whole length of the vessel. This upper deck is to be devoted entirely to cabin passengers. The engine to propel the vessel is to be a single cylinder beam engine. The cylinder is to be 60-inch diameter, and 11 feet stroke, and will be supplied with steam at 45 lbs. pressure from two boilers. The paddle wheels will be 32 feet diameter, with floats 10 feet broad. The engine will work up to 1,500 horse-power, and is expected to propel the boat at a speed of twenty miles an hour. The other boat to be laid on after the *Quebec* will be the same in all respects. Each these steamers, with all on board, will draw only about 5 feet of water. They are being built under the superintendence of Mr. William Inglis, a Canadian engineer, now settled in Edinburgh. When the *Quebec* is finished she will be taken asunder, packed up, and shipped to Canada.

Wrought-iron Fort for Russia.

The Russian Government is about to erect a fort at Cronstadt, which is to be heavily plated with wrought-iron slabs, 15 inches square. The process of rolling these bars is thus described by the *London Engineer:*—"The bars rolled on Saturday, however, were an advance again upon what has been hitherto done, and the result was looked forward to with some doubt, for each bar, when delivered, was to weigh six tuns, to be 15 inches square, to be tongued and grooved in the rolling, and to be perfect in its soundness throughout. The furnaces were opened at three o'clock, and the immense mass of metal was drawn forth on to an iron truck, heated to a brilliancy that was almost blinding in its intense whiteness, and instantly changing the temperature of the vast factory to a scorching sulphurous heat that was insupportable. Directly it was out, workmen, shielding their faces as they best could, swept the impurities from its surface with long brooms soaked in water, but which nevertheless lit like tow the instant they came in contact with the iron, which was sparkling like a gigantic firework. It was then let down the incline to where the rollers, turned by one of the largest fly-wheels in the kingdom—more than 100 tuns weight and nearly 40 feet in diameter—was waiting to crush the mass into its required form. This was the critical moment; for an instant or two the rollers failed to grip it, but at last they caught it, and the whole machinery moved slower, as amid loud cheers from the workmen they began to wind it in. As it was slowly crushed through, the refuse melted iron was squirted out in all directions, and as the mass emerged from the rollers on the other side it lit up everything with a bright lambent flame, said to be caused by the pressure to which the bar was subjected. This was only the first roll, but it had to be passed through three times to reduce it to the proper thickness. It was not, however, as in the case of ordinary armor-plates, a mere question of reduction, as these bars have to be rolled, tongued, and grooved to fit into each other. Thus in the rolling they have to overcome all the peculiar difficulties of their construction almost in two operations, which must be done while the metal is in a half melted state, or the whole is spoilt. The bars, as we have said, are fifteen inches square, but each of these presents a most difficult section. In the first place, the lower part of the bar has a projecting rib, and in the upper part is a groove, corresponding in size with the rib on the lower half, so that the projection of one bar may fit into the groove of the one beneath, thus making a solid dove-tailed wall of iron. Beyond these, also, is a rib at the back of the bar, formed to dovetail again into projecting masses of iron in the rear supports of the fort, and in the process of rolling all these departures from a plane and smooth surface have to be formed, and to be formed with so much accuracy that each part fits into the other without the necessity of any machine planing of surfaces. To give to the mass of metal the required section the rollers of the mill are grooved where the raised surface is required, and sunk to produce the projecting ribs. It took three rolls on Saturday before all was finished, and at the completion of each the workmen, who seemed intensely interested in the success of the experiment, cheered loudly. The last operation was effected by lifting the bar into a bed, so to speak, made between two masses of iron, and then passing over it an enormous iron roller, which removed the curved form the bar had received in passing between the rollers. Now that the success of the first bar has been achieved, the rolling of the others will go on every day until the whole order is completed. When the fort is erected in Russia it is intended to test its powers of resistance with a gun throwing a shot of a thousand pounds weight, which is in a short time to be cast in Prussia for the Imperial Government. In the caliber of its ordnance Russia seems making a great effort to keep ahead of the rest of Europe, and is most liberal in its orders for the largest guns in any country which will undertake to manufacture for it. But in the caliber of its ordnance Europe is now, as it ever has been, far behind America. At Pittsburgh, in Pennsylvania, a 50-tun gun has just been successfully cast for the United States Government. This monster piece of ordnance, which is stated to be perfect in its casting, is to throw a solid 20-inch shot weighing 1,600 lbs."

How to obtain Neat's Foot Oil.

A writer in the *Country Gentleman* thus describes the process of making this oil:—

"The process of obtaining this kind of oil is very simple, and many farmers often throw away enough feet annually to furnish oil sufficient to keep all their harness, shoes, and leather machine belts in the best condition. By breaking a bone of the leg of a fat bullock or cow, it will be found full of an oily substance which often appears as rich and edible as a roll of excellent butter. This is neat's foot oil, and it is sometimes surprising to see how much a single foot and leg will yield when it is properly treated.

"In order to extract the oil, wash the hoofs clean—then break up the shin bones, the finer the better, and cut the hoofs and bones of the feet into small pieces. Then put them in a kettle of any kind, and pour in water enough to cover the bones. The kettle should never be filled so full that the water will boil over the top of it. The finer the bones are broken, or cut, or sawed, the sooner the oil will be driven out. Now, let the kettle be covered as tightly with a lid as it can be conveniently, and boil the bones thoroughly all day. Of course, it will be understood that more water must be poured into the kettle as it evaporates.

"The object of covering the kettle with a close lid, is to retain the heat as much as possible, and thus expel the oil from the bones. The hot water and steam will liquify the oil and expel it from the bones, when it will immediately rise to the surface of the water. Therefore it is very important that the water should not be allowed to evaporate so low that the oil that has risen to the surface of the water should come in contact with the dry hoofs and bones, as much of it will be absorbed by them, and will be lost unless it be again expelled by boiling.

"When there appears to be oil enough on the surface of the water, pour in a pailful or two of cold water to stop the boiling, or let the fire burn down. Now dip off the oil into some clean vessel, and boil them again until there is oil enough to be dipped off again. The oil that is obtained by the first boiling is purer than that which is obtained at the second or third boiling.

"There will be some water among the oil which must be evaporated; therefore, put the oil in a clean kettle and heat it just hot enough to evaporate the water, and the oil will be ready for use. Great care must be exercised in heating the oil, so as not to burn it. As soon as the oil begins to simmer a little, the oil may be removed from the fire, as the water has evaporated. Water in oil, heated to the boiling point, will be converted into steam almost instantaneously, as may be seen by allowing a few drops to fall into boiling oil or hot lard. [This occurs from the difference of temperature at the boiling point of the two liquids, that of linseed oil being 597°.—Eds.] Let the oil be kept in a jug corked tightly, and it will be ready for use at any time for years to come. In very cold weather, however, it will require a little warming before using it."

Ik Marvel says:—"I have no faith in cats; they are a cold-blooded race; they are the politicians among domestic animals; they care little who is master, or what are the overturnings, so their pickings are secure; and what are their midnight caucusses but primary meetings?"

Useful Receipts.

We find in the *American Druggists' Circular* a number of practical receipts which may be useful to our readers:—

To Bleach Gutta-percha.—Dissolve gutta-percha (one part) in 20 parts of hot benzole, shake the solution with one-tenth part of freshly-calcined plaster, and set aside, with occasional agitation, for two days. The clear pale brownish-yellow liquid is then decanted into another vessel containing double its bulk of alcohol fortius, when the gutta will be precipitated in the form of a brilliantly white tenacious mass, which is pounded together in a mortar, and rolled into cylindrical sticks.

Scarlet Color on Wooden Figures.—Boil a little of best carmine with distilled water for four or five minutes in a glass or porcelain vessel, then add gradually some aq. ammoniæ, boil a little longer, then cool. The wood must be left immersed in this liquor for some time.

Black Varnish for Flexible Surfaces.—Take of asphaltum, in coarse powder, 24 ounces, macerate in a flask for a day or two, with frequent shaking, in 21 fluid ounces of benzine. Decant the clear solution, and mix it with that of one or two ounces of manilla elemi, and one ounce of balsam copaiba in sufficient benzine; if necessary add more benzine to get the proper consistence.

To Powder Camphor and Gum Resins.—A writer in the *Schweizerische Wochenschrift fur Pharmacie* recommends instead of the usual method with alcohol, to reduce the camphor to powder by means of an ordinary kitchen grater and separate the finest powder by sifting. The coarse pieces may be used for some other purpose. We are inclined to think that powder prepared by this method will keep better than when it has been in contact with a liquid. To obtain gum resins in powder, often a very difficult task, the same writer directs that they be triturated with a few drops of sweet oil of almonds.

Obstinate Constipation.—M. Homolle has found the following powder efficacious in two cases, where obstinate constipation had raised the question of operation for artificial anus: powdered strychnine, one-fiftieth of a grain; powdered nux vomica, one-fifth of a grain; calcined magnesia, six grains; mix. One powder a day at first, then two, and finally three, per diem. In both cases the bowels were moved, and the symptoms of suspected internal strangulation disappeared.

Genuine Cologne Water.—One of the Farinas has published the following formula for this celebrated perfume, which we copy from the *Zeitschrift des Norddeutschen Apotheker-Vereins:*—

R Benzoini (purified) 2 ounces
Ol. Lavandulæ 4 "
Ol. Rosmarini 2 "
} by weight.

Alcoholis fortioris 9 gallons. To this solution are added successively:

Ol. Neroli,
Ol. Neroli petits grains,
Ol. Limonis, of each 10 2-5 ounces,
Ol. Aurantii Dulcis,
Ol. Limettæ,
Ol. Bergamii, of each 20 4-5 ounces,
Tinct. Flor. geranii rosei q. s. Macerate for some weeks, then fill into flasks.

An Astute Official.—A quantity of lupine seed—found very useful in Prussia for forage and for green manuring upon sandy soils—was lately ordered from Europe by the Commissioner of Agriculture. The time for its reception has elapsed—but no lupine! A note of explanation is received. The appraiser of customs at New York, watchful against smuggling or nominal duties, had been spending three weeks analyzing the "lupines" (which were addressed to the Agricultural Department in due form) to see if they did not contain the essence of the famous "Lubin's Extract."

Gutta-percha is now used to protect the feet of horses from tenderness and slipping. It is first cut into small pieces and softened with hot water, then mixed with half its weight of powdered sal ammoniac, and the mixture melted in a tinned saucepan over a gentle fire, keeping it well stirred. When required for use, melt in a glue pot, scrape the hoof clean, and apply the mixture with a knife.

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THE NEW PLANET.

Since the brief paragraph was in type announcing the discovery of a new planet, we have recevied Mr. Beswick's computation of its elements:—

Epoch, February 12, 1864.

Distance	0.4053
Longitude of node	321° 48′
Inclination	10.77°
Period in days	94.1326
Daily motion	3.82439°
Apparent diameter	8″
Mass (Earth—1.00)	0.11

Mr. Beswick saw this planet cross the sun's disk on February 12, 1864, at 8h. 20m. in the morning. It was then 10′ 20″ from the eastern limb, and 14′ 20″ from the southern limb of the sun. Its motion was exactly 711″.66 in 100 minntes.

The whole time of transit was exactly 4 hours 33.5 minutes. The segment of the sun's disk which the apparent path of the body cut off was a complete diameter.

Its progress across the sun's face exceeded that of Venus and was less than that of Mercury. Its figure was that of a dark, round, and well-defined spot. Its size was 8″, or a little less than than of Mercury at its greatest diameter. Indeed the whole appearance —figure, density, velocity and regularity of motion— was indicative of its being the transit of a planetary body whose path is included between the orbits of Mercury and Venus.

Mr. Beswick cites six previous observations by astronomers of the transit of a dark body across the sun's disk, which correspond exacty with the periods of this planet as computed by him:—

"The first recorded transit of an unknown body is that of Lescarbault, who saw a round body transit the sun's disk on March 26, 1859, at about four o'clock in the afternoon. He and Leverrier computed its orbit, and announced it as an inter-Mercurial planet, whose period is less than twenty days, and its distance about 0.1427. And Leverrier has given to this planet the name of Vulcan. But the planet's place is unknown, as it has never been seen since.

"Now, in computing back the times of inferior transit of the body seen by me February 12, 1864, I find that it would transit the same on the very day and hour when Lescarbault saw a body cross the sun's disk. For between February 12, 1864, and March 26, 1859, there are exactly 14 inferior transits, or

$$\left.\frac{1784.9 \text{ days.}}{14 \text{ transits.}}\right\} = 126.817 \text{ days.}$$

So that the planet seen by Lescarbault in France, and named Vulcan by Leverrier, is doubtless the same planet as the one whose orbit I have computed, and which was seen by me in 1864. But its distance from the sun is 0.4053 instead of 0.1427, or nearly three times as distant as Leverrier supposed it to be; and its path, which lies between Mercury and Venus, instead of Mercury and the Sun, is 94.1326 days instead of less than 20 days, or nearly five times as great as Leverrier supposed it to be."

The next observation in going back was that of Schmidt, October 11, 1847, the interval being exactly equal to 33 inferior transits. The next was by both Stark and Steinhubel, June 20, 1820, the interval being just 80 transits. It was seen by Stark at the next earlier transit than that of June 20, 1820, on the 9th of October 1819. Fritsch saw an unknown body transit the sun on the 10th of October 1802, and this interval proves to be equal to exactly 49 transits. Finally the earliest known mention of this body was by Schentan and Crefield on the 6th of June, 1764; 111 transits earlier than that observed by Fritsch.

Mr. Beswick gives the position of this planet on the following dates, so that observers will know where to look for it.

	Right Ascension. h.	m.	deg.	Declination. S. deg.	m.	sec.
May 5	12	59	34.788	6	39	00.000
6	13	10	48.492		59	22.926
7		22	02.116	7	19	45.852
8		33	15.820		40	08.778
9		44	29.524	8	00	31.704
10		55	43.228		20	54.630
11	14	6	56.932		41	17.556
12		18	10.636	9	01	40.482
13		29	24.340		22	03.498
14		40	38.044		42	26.334
15		51	51.748	10	02	49.160
16	15	3	05.452		23	12.086
17		14	19,156		43	35.012
18		25	32.860		28	27.064
19		36	46.564	10	8	04.138
20		48	00.268	9	47	41.212

A circle whose radius is 15°, with the sun as a center, will include the position of this planet up to May 10th. And during its Eastern elongation, which will continue to May 17, it is possible that the planet may show a phase distinct enough to be visible just before sunrise, to a good observer with a good instrument. Its next inferior transit across the sun's disk will be early in the morning of June 18, 1864.

About Whitewashing.

The time for cleaning and fixing up has come, and one of the most important items is whitewashing. We often wonder that people do not do more at this. How much neater and more cheerful a whole place looks, if a few hours are spent in whitewashing the fence, the outhouses, the cellars, &c.; it changes the whole appearance of the homestead. One day's work thus expended will often make a place twice as attractive and add hundreds of dollars to its saleable valuation. Whitewashing a cellar with lime not only makes it lighter and neater, but more healthful, also. For cellars, a simple mixture of fresh slacked lime is best. For house rooms, the common "Paris-white," to be bought cheaply, is very good. We take for each two pounds of whiting, an ounce of the best transparent glue, cover it with cold water over night, and in the morning simmer it carefully without scorching, until dissolved. The Paris-white is then put in hot water, and the dissolved glue stirred in, with hot water enough to fit it for applying to the walls and ceilings. This makes a very fine white, so firm that it will not rub off at all. When common fresh-slaked lime is used, some recommend adding to each 2½ gallons (a pailful), two tablespoonfuls of salt and half a pint of boiled linseed oil, stirred in well while the mixture is hot. This is recommended for out-door and in-door work. For an out-door whitewash, we have used the following with much satisfaction: Take a tub, put in a peck of lime and plenty of water to slack it. When hot with slaking, stir in thoroughly about half a pound of tallow or other grease, and mix it well in. Then add hot water enough for use. The compound will withstand rain for years.—*American Agriculturist.*

Spectral Ray of Thallium Paralysed by that of Sodium.

It appears that if thallium be present in small proportions in a compound containing chloride of sodium, the action of the ray characteristic of the latter is so powerful that the thallic ray remains unperceived. Hence, although the thallic ray be not observed in the solar spectrum, it by no means follows that the metal itself does not exist in the sun. This is a fact of great importance, not only in regard to ordinary chemistry, but as it bears on toxicology. For in an analysis (spectral) of the animal tissues or liquids, one is certain to find chloride of sodium in abundance, and therefore, were thallium present in small proportions. it would escape detection by this method. If it be required to examine mineral waters and such-like for thallium, it will be necessary to separate the metal in the first instance from the excess of soda; this may be done by one of the methods pointed out by M. Lamy; viz., either by depositing it on zinc, or reducing it by galvanic means, or by precipitating it with sulphide of ammonium or iodide of potassium.—[See a memoir of M. Nickles in the *Comptes Rendus* for January, 1864.

Chemistry of the Oil of Nutmeg.

The nutmeg owes its peculiar aromatic properties and flavor to a volatile oil which is present in large quantities, but up to this it has not been submitted to a chemical examination. This oil may be extracted by boiling the kernel in an ordinary retort, but in this process only a portion of the essence is obtained. A preferable method appears to be the treatment of the finely-powdered nutmeg with bisulphide of carbon or sulphuric acid. The mixture is then filtered, and a stream of vapor is caused to play upon the residue, which then looses all the essence it contained. The composition of the essence obtained in this manner is the same as that of volatile oil of turpentine.

THE stock of sugar in the British warehouses has been rapidly increasing for the last three years, and is greater now than it ever was before.

Direct Production of Wrought Iron and Steel in the Blast Furnace.

A very interesting method for obtaining the above result has recently been patented by Mr. Johnson, of Lincoln's Inn Fields, England. The process consists essentially in the introduction of finely divided oxide of iron into the blast, which, of course, conveys it to the metal in the furnace. The result of this introduction of oxide is that the cast iron becomes decarbonated in the blast-furnace itself, without being placed in puddling or other furnaces. Any other oxide which acts in a similar manner may be employed with equal advantage, and other substances may be employed for the purpose of purifying the metal. The crucibles which are usually employed must undergo some modification in order to admit of the patented system being carried into execution. It is thought advisable to heat the oxide to dull redness before allowing it to enter the blast pipe.

Newly-discovered Bone Cave.

The *Popular Science Review* says:—"In making certain excavations in the rock of Gibraltar, the engineers have come upon a very extensive cavern containing the bones of numerous extinct mammalia and of man. From what we have already heard, this grotto bids fair to throw more light upon the question of the age of pre-historic man than any hitherto examined. As yet we have had no minute description of the fossils discovered in this locality, but we have been informed that a very great number of specimens has been forwarded to this country by one of the Gibraltar authorities particularly interested in the geology of the excavation."

A WOMAN WITH HORNS.—The New York *Observer* of the 12th inst., contains a letter from its correspondent at Larnaca, in the Island of Cyprus (Turkish dominions), describes a most remarkable *lusus naturae* recently discovered there. It is nothing less than a woman with *horns growing out of her head!* She has one large horn on the side of her head of the size and consistancy of an ordinary ram's horn, besides three or four cornicles on other parts of the head. The writer states that he has seen her and that she has been visited by nearly all the Consuls and Europeans in that place, some of whom are making an effort to secure her for exhibition.

SPONTANEOUS GENERATION.—There is at last a prospect of the question of *equivocal generation* being settled. We learn, from the *Comptes Rendus*, that the Academy has appointed a commission to inquire into the evidence on both sides, and that M. Pasteur and Messrs. Pouchet, Jolly, and Musset have been invited to repeat their experiments in the presence of the commissioners. The invitation has been accepted by both parties, the advocates of spontaneous generation appearing to be quite sanguine of success, and reposing the most perfect confidence in the impartiality of the commission.

STAR MAPS.—The magnificent catalogue and star maps of Professor Argelander are now completed—the number of stars registered amounting to 324,198 altogether, which are visible in the northern hemisphere with a telescope of 4½ foot focus. The preparation of this great work has taken upwards of seven years, in which there were 635 clear nights, and the number of observations amounted to more than a million. The month of October was found to be best adapted for observations in the climate of Bonn, Germany.

VERDICT ON THE "CHENANGO" DISASTER.—In the *Chenango* disaster the verdict of the jury was that the boiler exploded through defective bracing. Just half the number of supports for the brace-rods, required by the specification, were put in the boiler, and the Government inspector is censured for neglecting to inform his superior officers of the departure from the contract. A minority report was also brought in by some of the jury, who agreed to consider the explosion as caused by superheated steam.

IN the afternoon of the bloody day of Waterloo, as Wellington threw himself into one of the hollow squares of infantry, he observed to the officers, "This is hard pounding, gentlemen, but we will pound the longest." Again he remarked, "Three times I have saved this day by perseverance."

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THE MONITOR TURRETS.

We have no desire to enter into a controversy with our trans-Atlantic contemporary, the *Mechanics' Magazine*, upon the respective merits of Captain Coles's turrets and Captain Ericsson's turrets; time has proved, and will still further prove, that what we have said about our vessels is fully sustained by their merits, and our article published on page 201 of the current volume of the SCIENTIFIC AMERICAN, commenting upon the two kinds of vessels, was called forth by the production in the *Mechanics' Magazine* of elaborate and extensive engravings of the two turrets—Coles's and Ericsson's—in such a manifestly unfair manner that we could not pass them without comment. The *Artizan*, another English journal, has since published a series of engravings, purporting to be representations of the monitor turrets, or United States floating batteries, and we also commented upon them, as we felt it our duty. Since the drawings in the *Artizan* are so widely different from those in the *Mechanics' Magazine*, surely the editor of the latter will see that our criticisms and strictures were not unjust. If these drawings represent the knowledge the English possess of our turrets so much the better for us, and the worse for them. It is unreasonable to publish such abortions, to father them upon Americans as the inventors of them, and then expect us to hold our peace.

In regard to the endurance of the monitors, let us examine the facts and leave speculation for awhile. The monitor *Montauk* has been struck 214 times with 9 and 10-inch shot at close range, and the *Weehawken*, before she sunk, 187 times, almost entirely by 10-inch shot. Now the former vessel is as good to-day as she ever was, notwithstanding this tremendous pounding, and can go anywhere under fire. The turrets of these ships are made wholly of the despised thin plates, built up in sections, which, when damaged, are easily removed and replaced, and the tests they have withstood prove them worthy of confidence. "But," says the *Mechanics' Magazine*, in another paragraph, "if our engravings are wrong why does not the SCIENTIFIC AMERICAN present correct ones?" There are good reasons for our declining this proposition, which will be apparent on reflection.

The *Mechanics' Magazine* exposes the source from whence it derives its knowledge of the monitors by referring to the official report after the engagement of April 19th, 1863; it is not the only journal, at home or abroad, that has been deceived by it. If the editor had reflected a moment he would have discovered that the defects he criticises and publishes engravings of, were those discovered in new ships immediately after the engagement, and did not refer to the condition of the turrets and the ships the next morning, or ten hours thereafter. This fact was stated in our first article, and it strikes us as singular that the editor overlooked it. The difficulty experienced by the pilots in the turret—in obtaining a clear view ahead—was solely the result of the suggestions made to Captain Ericsson by naval officers. These persons thought that a simple round hole in the pilot-house wall, deeply flaring or counter-sunk inwards, would afford sufficient range of vision. This idea was proved to be an erroneous one, and the plan adopted on the first monitor is in use in all, and a range of 120° of the horizon is now obtained *through one sight-hole*; there are five in all, we believe, in the pilot house, and the view of the vicinity is almost unlimited. The broken bolts we referred to in our previous article, and accounted for the solitary disaster which occurred from them; not the slightest trouble has since been felt from them. Why does our contemporary quote the report to prove us wrong? The heavy wrought-iron ring which shields the base of the turret and the pilot-house and prevents broken shot from entering between it and the deck, was not mentioned in the reports previously referred to, for very good reasons—doubtless somewhat similar in character to these which prompted the officers to find all the fault they could, but to refrain from expressing any favorable opinion of the monitors, or of any iron-clad built on their plans. Shot might be heaped to the muzzle of the guns without interfering with the rotation of the Ericsson turret.

Our contemporary seems to have rather confused ideas in respect to laminated armor and its application to the defense of ships. He ascribes more knowledge on the subject to us than combined Europe possesses, and asks somewhat superfluously, "What on earth have our armor-plate committees been about all this time?" As this question may be asked in future, we leave it for time alone to answer, but we beg permission to call the attention of our foreign contemporary to the reports of the experiments at Shoeburyness, which have been published from time to time in his own journal. Does he not read therein that the thick armor plates have been repeatedly smashed, cracked, and penetrated? Have they ever stood against heavy shot in cases enough to warrant their adoption?

We have read edifying reports in the English journals, wherein it was stated that some public functionary (a Lord of the Admiralty it might be, who knows as much about iron plates and the effect of shot upon them as he does about Lord Rosse's telescope) peered curiously at the indentation caused by the shot, or at the remains of the plates, and surveying the cracks and the shattered condition of the armor, sits down and writes reports that the plates are impervious, and that 5½-inch armor is heavy enough for any ship, and proof against the best modern artillery. Does the editor of the *Mechanics' Magazine* not know that the best 6-inch solid plates made in France, have been smashed in fragments by our 15-inch gun at reasonable range? If not then we can tell him something new, and point to the system of laminated armor covering a heavy slab as novel, useful, and a defence which is invulnerable to the heaviest projectiles and charges we fire here, and they are not 68-pounders, but 380-pounders. This is no place to discuss the merits of different systems of armor plating, but speculation and theory applied to controvert the results of practice in actual and deadly combat, is so clearly absurd that we pursue the subject no further. The turrets of the monitors have never been penetrated, and we have examined the one on the *Passaic*, the vessel which came home as "seriously injured," and the deepest indentation in it was not over one inch and a half. The Whitworth shot, or facsimiles of them, struck the turret crossways, so to speak, and there was one large hole, in shape like an ellipse, in the top of the chimney, which showed plainly that these "destructive" missiles went end over end like boomerangs to their mark.

It is not our affair if the English choose to build frigates instead of monitors, and clothe them with slabs instead of armor of a proper kind. If shot smash and crack them so that they drop off, or the resistance to the live strength of the shot shatters the ship's frame so that she is useless after a severe engagement, these are results that must be learned by experience. We have put our trust in thin armor plates, skillfully applied, and have never been confounded. We are requested to consider the *Rolf Krake*, an English ship on the Coles's plan of turrets, and her doughty deeds. What has she done, pray? She went within long range of some tremendous Prussian 32-pound rifled guns, and not being actually sunk is pointed out as an example of an invulnerable iron-clad.

Our contemporary may deride our ships as much as he chooses, but when he brings to his aid the engraver, and designs something which he calls plans of our iron-clads, and gives them to the world as the fruit of American inventive skill, he must not blame us if we challenge their accuracy, and repudiate the forgery in the name of American engineers and American ingenuity.

RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week; the claims may be found in the official list:—

Black-washing Pipe Molds.—This invention consists in the employment of a casing fitting nicely over the sprinkler and arranged in such a manner that when the casing covers the sprinkler the latter can be filled with black-wash and nothing is allowed to escape, and after the sprinkler has been adjusted in the proper position over the center of the mold, said casing can be readily removed; the application of the black-wash to the inside of the mold can thus be effected in a short time with little trouble and without danger of injuring the interior of the mold. The invention also consists in the combination with the sprinkler of a conical guide piece or head, in such a manner that the sprinkler is retained in the center of the mold and prevented from damaging its sides. The invention consists, finally, in a fender placed under the mold into a suitable tank and used in combination with the sprinkler, in such a manner that the sprinkler, after having passed through the mold is still kept in the center and prevented from floating off to any other part of the tank whence it would be difficult to recover. George Ross, of Newport, Ky., is the inventor of this improvement.

Gas-burner Socket.—This invention relates to the sockets by which portable pendants or the flexible tubing, portable table-stand lights are attached to the burner of gasoliers or gas brackets. These sockets are made of two pieces, between which the india-rubber or other elastic packing ring or rings are commonly secured by burring the edge of one piece over a shoulder provided on the other; but this mode of securing the packing does not provide for the adjustment or contraction of the packing which, by the frequent removal of the socket from the burner and its replacement thereon, soon wears so as to fit the burner too loosely to prevent the escape of gas around it. The object of the invention is to provide for the adjustment and contraction of the packing to make it fit the burner tightly; and to this end it consists in uniting the two parts of the socket by means of a male screw-thread on one and a corresponding female screw on the other, by which means the packing is enabled to be compressed in the direction of the length of the burner, thereby causing the contraction of its opening and making it fit tightly to the burner. Joseph Todd, Madison, Ind., is the inventor of this improvement.

Combined Abdominal Supporter and Corset.—This invention consists in constructing stays or corsets in such a manner that they will, when applied to the wearer, be made to answer, besides their legitimate purpose, that of an abdominal supporter and a truss, and be capable of being applied so that they may be worn with great ease and comfort, and by females even when in a state of pregnancy, and also be capable of being adjusted and applied so that a requisite pressure may, in all cases, be exerted upon or against the abdomen of the wearer. Mrs. S. A. Moody, of New York city, is the inventor of this improvement.

Sheep Shears.—This invention consists in the employment or use of a guard attached to the shears in such a manner as to effectually prevent the latter from cutting the skin of the sheep during the process of shearing the latter, and also to prevent the wool from distending or forcing apart the blades of the shears during the cutting operation, a contingency which frequently occurs, especially when the shears loose their keen edge in consequence of the wool slipping in parallelly between the two blades. J. A. Hadley, of West Waterford, N. Y., is the inventor of this improvement.

Lock for Fire-arms.—This invention consists in giving additional support to an outside hammer applied to a fire-arm by making a hub boss on the inner face, and counter-sinking the outside of the frame of the arm concentric with the bearing of the main spindle or arbor of the lock, to form a bearing for the boss within the frame. It also consists in a certain novel mode of applying a safety stop in combination with the hammer for the purpose of stopping it a little way from the nipple or from the place where it strikes to fire the charge. Both features are applicable to either muzzle-loading or breech-loading fire-arms. Eben T. Starr, of New York city, is the inventor of this improvement.

Fire-arm.—The object of the first part of this invention is to enable the charges in several fixed barrels to be fired, one at a time, in succession, by means of a single hammer without giving the hammer any other movements than those necessary for cocking and striking, and to this end it consists in the employment of a revolving and sliding plunger interposed between the hammer and the barrels to transmit the impact of the blow of the hammer to the percussion priming employed for firing the charges. It also consists in so combining the revolving plunger with the hammer of the fire-arm that the necessary revolution of the plunger may be effected by the act of cocking the hammer. Eben T. Starr, of New York city, is the inventor of this improvemant.

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Hoop Skirt.—The object of this invention is to admit of the hoop-skirt readily contracting lateralty, when subjected to any lateral pressure, and without being thrown up in front, as is now the case with the ordinary hoop-skirts. To this end the invention consists in having the lower hoops of the skirt divided into two parts and having them connected by rings or joints to form a flexible connection which will admit of sides of the skirt readily yielding and bending inward without being thrown upward in front when subjected to lateral pressure, as for instance in being seated in a public conveyance in close contact with passengers on each side. Mrs. S. A. Moody, of No. 12 East 16th street, New York, is the inventor of this skirt.

Comparative Cost of Petroleum and Gas.

On the 24th of February, William Marcet, Esq., M.D., F.R.S., read a paper before the Society of Arts, in London, giving the history of some elaborate experiments undertaken by him to ascertain the comparative quantity and cost of light produced by burning petroleum, illuminating gas and other substances. The results are thus given:—

"Let us now proceed to compare the light given by a petroleum-lamp, with a wick six-eighths of an inch broad, and that given by tallow candles, composites, sperm candles, and oil. The results have been arranged in the form of the following table, on which I shall make a few remarks:—

	Petroleum.	Gas.	Tallow Cands.	Composites.	Sperm Cands.	Colza Oil.	Sperm Oil.
Light emitted by petroleum lamp equal to.....	1·	1 to 1·3	10·	6·3	6·5	0·61	0·55
Weight burned in 3 hours 18 minutes	1386 grs.	12·7 cub. ft.	408 grs.	550 grs.	480 grs.	2901 grs.	3250 grs.
Price of material burned in 3 hours 18 minutes.....	1d.	½d.	½d.	1d.	1½d.	2½d.	5d.

"From six experiments, where the amount of petroleum burned varied from 393 grains to 466 grains per hour, the average quantity of the oil consumed was 420 grains, the price of which, at 3s. 8d. a gallon, would be three-tenths of a penny, and consequently an amount of petroleum worth only 1d. will burn for 3 hours and 18 minutes. Now, 2 tallow candles burning for 3 hours and 18 minutes, will cost about 1d.; and as, according to my experiments, petroleum gives about 10 times as much light as a tallow candle, it will follow that the expense of burning petroleum will be the same as that of burning 2 tallow candles, and there will be no less than 5 times as much light obtained from the oil as from the 2 candles.

"In comparing the expense of burning petroleum with that of consuming coal gas, by measuring the amount of gas consumed with a very accurate gas-meter, it will be found that the quantity of gas burned by a good fish-tail burner in 3 hours and 18 minutes is 12·7 cubic feet, which at 4s. 6d. per 1,000 feet, will cost six-tenths of 1d., or, in round numbers, a trifle over one half-penny. With respect to the light given out, that of gas supplied as above is generally a little less powerful than that of petroleum, but for all practical purposes both lights may be considered equal; consequently, gas in London, at 4s. 6d. per 1,000 cubic feet, is half the price of petroleum, but the oil presents many advantages over gas which will make up, in a great measure, for the extra expense—as, for instance; the portability of a lamp; the pleasant, subdued light of petroleum, instead of the dazzling brightness of gas; and also the fact shown by Dr. Frankland, that there is less heat given out by petroleum than by gas, and less products of combustion injurious to health. Then in many small towns gas is very dear, and houses are but indifferently supplied with it; in other places, such as village country houses, there may be no gas at all, and in these cases rock oil becomes an invaluable boon."

It will be observed that the price of London gas is just one-third of the price charged by the New York companies, and their's may also be superior in quality to ours. On the other hand petroleum costs nearly twice as much in London as in New York. Consequently in New York gas is about three times more costly than petroleum.

In consequence of the decline of the hoop skirt business many men were left with braiding machines on their hands. Baulked in this direction they have launched out into the business of braiding shoe strings, and some are prosecuting a profitable trade in this new line.

MISCELLANEOUS SUMMARY.

Nasmyth's Solar Discoveries.—Mr. Nasmyth claims to have been the first "to discover, delineate, and accurately describe" the structure and structural details of the sun's luminous surface, and those curious forms which he has termed the "willow leaves," with which this luminary is completely covered. He states that they are scattered in every direction over its surface—no symmetrical arrangement being perceived. He estimates their length at 1,000 miles, and their width about 100. The thickness of the layer of those luminous spots does not appear to be considerable, as the semi-luminous atmosphere on which they float can be perceived through the interstices, and which give the sun its peculiar and well-known mottled appearance. The actual form of those singular bodies is best seen when they drift across a spot and form those "bridges" which occur when the spot is collapsing.

Our Finances.—*Thompson's Bank Note Reporter* in an article upon the policy of Secretary Chase says:—"He appeals afresh to the people in this the most trying military and financial period of the rebellion, to come forward with heart and money. He is reducing the volume of currency gradually, and will continue to do so. If the stock and gold gamblers shall again attempt the game they played lately, he will bring the whole power of the Government, and its whole means, both here and abroad, to checkmate them. The Secretary of the Treasury relies upon the people for the ways and means; upon the army for victories; and upon Congress for adequate taxation."

Armed Steamers in the Pacific.—The Pacific mail steamship, *Constitution*, Commodore Watkins, has completed her armament, in mounting a hundred-pound Parrott rifled gun, in addition to her two Dahlgren rifles. This monster piece of ordnance is placed forward on the main deck, and its working gear is so arranged that it will have full play when called into action. It carries a solid shot of sixty pounds, and has a range of four miles. Her Dahlgrens are twelve-pound rifled guns, carrying a solid shot of sixteen pounds. With this armament Commodore Watkins entertains no fear of piratical cruisers, and taking into consideration the vast size and speed of the *Constitution*, even if he should encounter the *Alabama*, he could easily capture or sink her.

A man in Worcester, Mass., has invented a machine for turning clock and watch pivots, or cutting round tenons on square or round rods or wire. Pivots of different sizes and length are cut in this machine on any size wire or rod with the greatest accuracy, and without centering, the pivot or tenon being perfectly true with the outside of the rod upon which it is made. It also makes tenons upon any kind of tubing, such as gas pipe or gun barrels, without centering or using a mandrel, said tenon being true with the inside of the bore.

Morris Island would be a great place for a junk dealer. A recent letter says that over one hundred tuns of iron, consisting of broken guns, fragments of shells and unexploded shells, have been gathered in a heap at the ordnance depot, and that the quantity would be greatly augmented, if the projectiles buried in the sand were dug up and added to the heap.

Catalogue of Nebulæ.—A valuable work, containing all of Sir W. Herschel's nebulæ (2,500 in number), with other catalogues, and comparisons between them, has been published by M. Auwers. The want of such a work has long been felt by such observers as were engaged in searching for comets, as no complete catalogue existed previously.

The hot-air bath is recommended as a possible cure of phthysis. Some of the most eminent British physicians are recommending the Turkish bath as a great restorative of health.

It costs $50 per day to board at the hotels in Wilmington, N. C., and the fare is represented as very poor at that.

The workmen are laying the ways for launching the *Puritan*, and she will probably be launched in the course of a few weeks.

Amy Solomon, of Attleboro, Massachusetts, died May 1st, at the age of one hundred and seven years.

We are indebted to Hon. James Brooks, M. C., for valuable public documents.

FOREIGN INTELLIGENCE.

French Armor Plates.—Further trials of French armor plates, made by Messrs. Petin, Gaudet & Co., of the Rive de Gier, have taken place, since our last, at Portsmouth, and in each case their 4½-inch plates have earned the distinction A 1, to which only the best 6-inch plates of home manufacture have yet attained. The plates were tried in the usual manner, with a 68 lb. shot, fired with 16 lbs. of powder, at a range of 200 yards. The results have caused much comment in naval circles as well as among our iron masters.—*London Engineer.*

[A 15-inch shot was fired at a 6-inch best French plate with a charge of 30 pounds of powder, quite recently, in Washington, and after the shot struck there was a very large quantity of scrap iron in the place of the French plate.—Eds.

The Penalties of Fame.—The great English poet Tennyson is exposed to great annoyance from the curiosity of intruders. Strangers are found from time to time seated in his garden, peering in at his windows, wandering freely through his grounds. From the lawn in front, when conversing with his family in assumed privacy, he has, on casually looking up, discovered an enterprising British tourist taking mental notes of his conversation from the branches of a tree above. Mr. Tennyson has been compelled to make fences, raise embankments, train foliage, and in fact half fortify his house, and in spite of all is not permitted to enjoy what any of our readers so circumstanced would expect to enjoy as a thing of course—the quiet freedom of a country home.

The Atlantic Telegraph Cable.—Messrs. Glass, Elliott & Co., of London, have purchased the entire works of the Gutta Percha Company, and formed a new company under the name of the "Telegraph Construction and Maintenance Company," with a capital of £1,000,000, for the purpose of making and maintaining telegraph lines of communication, both submarine and on land, in every part of the world. The new company are to carry out Messrs. Glass, Elliott & Co.'s contract with the directors of the Atlantic Telegraph Company to manufacture and lay down, in the summer of 1865, the cable between Ireland and Newfoundland.

There have been launched at St. Petersburg two gunboats, constructed in the building yard of Messrs. Carr & McPherson of that city. Those two vessels, named the *Latnik* and *Bronenossetz* (which signify "Clad in a Cuirass," and "Coat of Mail"), are constructed on the American system improved by Ericsson, and armed with two cannons. They are 200 feet long, 46 feet wide, and 11 feet deep. The engines are of 160 horse power. The launch, which took place in the presence of the Minister of the Navy and a great number of officers of the fleet, was followed by a breakfast.

A paper has been addressed to the Agricultural Society of Chalons, in which it is stated that potatoes may be safely grown free from disease by merely planting them in June instead of April. The writer, who has proved his theory by several years of successful experiment, is of opinion that by planting the roots in April they become corrupted by the alternate frost and heat.

Measures for restocking the lakes and rivers of Switzerland with fish have for some time past been in operation. Up to the present time a million and a half of young trout have been introduced into the Lake of Zurich.

An enormous cylinder, weighing above 30 tuns, intended for Her Majesty's iron ship *Minotaur*, was received at Woolwich recently, from Messrs. John Penn & Son, having been conveyed thither by a team of 30 horses.

Four steel pad dle-steamers, very fast vessels, are reported to be building at Liverpool for the Confederate merchant service. They are intended to run the blockade. They will be acceptable additions to our navy.

The French now make bonnets out of india-rubber, painted to imitate Leghorn braid. India-rubber bonnets ought to fit any head.

The American copper-toe shoe is introduced into use in England, and is much approved.

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Correspondence

An Experiment with a Steam Engine.

MESSRS. EDITORS:—I was called upon a few days since by Mr. G. B. McDonald, constructing engineer of the Louisville rolling mill, to witness an experiment on one of its principal engines—an account of which may prove both useful and instructive to many of your readers.

In this trial the throttle valve alone was used (the governor valve was thrown full open). After setting the throttle so as to give about the ordinary piston travel per minute it so remained through the experiment. The engine when cutting off at half-stroke made 28 revolutions per minute; the change was then made to full stroke by simply changing the cam hooks, when the running speed fell off until only 17 revolutions per minute were obtained in the same time. These tests were repeated three several times during half an hour, with precisely the same results. The boiler pressure by the gage was 125 lbs. The engine was merely driving the unloaded machinery—shafting, gearing, &c.—which equals about fifty tuns.

Mr. McDonald stated that the engine in question was in first-rate order, as it had been running but a few days since it was thoroughly overhauled by the maker. It has a 26-inch cylinder by 5½ feet stroke, with puppet valves, levers and lifters worked by eccentrics. The fly-wheel, 18 feet in diameter, is on the counter-shaft, driven by a 16-feet spur wheel on the engine shaft, and made about 2½ revolutions to 1 of the engine.

Does not the above test show the practical difference between wire-drawing, as it is termed, and expanding steam?

In my practical tests of stationary engines, using slide valves and steam chests, I long since discovered there was a proper or proportional size for the capacity of the steam chest relative to the size of the steam cylinder and point of cutting off. My experiments showed that a point could be reached where the supsnpply preserved with the chest would approximate very closely to that of the boiler, while using the common governor and valve. It is easy to perceive, if the chest was too small, that the quantity would fall short; if too large, the amount of pressure would not be reached. Beside, large chests or castings, to fill between the governor valve and piston (when under the control of a governor), cause more fluctuation of speed than small ones, and especially so where the amount of fly-wheel is insufficient, which is too generally the case in the West.

N. COPE.

Louisville, Ky., April 23, 1864.

[We should like to see cards from the engine in question—they would tell the whole story. As our correspondent adds—in another portion of his acceptable letter—the principle, or rather the reason, for the defect is not new, and has been suggested many times before. Engines in general—ordinary stationary engines—follow a great deal further than they should; more steam enters the cylinder than is required to do the work, and the result is not only a waste of fuel but a loss of useful effect in the engine itself. Such engines labor heavily and act as if afflicted with the asthma. Five-eighths of the stroke is far enough for any engine to follow. Very many engines whose ports remain open to the end of the stroke, would be greatly benefited by adding lap, if the valve is a slide, and shifting the eccentric to cut off sooner, or altering the toes and eccentric to make the valves drop sooner if they are poppets.—EDS.

A Valuable Testimonial.

MESSRS. MUNN & CO.—*Gentlemen:*—For a number of years past I have been constantly experimenting in machinery, and since the commencement of the rebellion, in gunnery, shot, shell, &c. During my short career as an inventor I believe I have employed "Munn & Co." in all the business connected with the Patent Office excepting one job. During the three past years six patents have been secured for me in this country and one in England and one in France. You will acept my most grateful acknowledgments for the prompt manner and untiring energy always exhibited [in your efforts in all my cases before the Patent Office. Allow me, through you, to thank your very able and gentlemanly assistants at Washington for their numerous kindnesses to me.

I have sold out my interest to the "American Projectile Co.," No. 48 Pine street, who will continue the business as usual. The parties are men of worth and influence, and will no doubt continue to employ your services. Should life and health be continued to me, I hope to be remembered as among those who are engaged in some of the great enterprises for the developement of our national industry.

Yours, very respectfully,

W. STAFFORD.

New York, May 3, 1864.

[Mr. Stafford is well known to the readers of our journal as the inventor of the "Stafford Projectile."—EDS.

Destruction of an Iron Propeller in a Coppered Ship.

MESSRS. EDITORS:—At the last meeting of the Institute of Technology, in this city, a gentleman, well known as one of our greatest pioneers in all that relates to shipping, presented some fragments of a cast-iron propeller, which was attached to a coppered ship, which was remarkably deteriorated. To use the gentleman's own words:—"It had the consistence of graphite, and could be shaved off with a pocket-knife to a depth of ¼ of an inch from the surface." Several reasons were given for this rapid deterioration (the screw having been in the water but a few months), but the right one perhaps was not hit upon. It is well known that a piece of iron in a salt of copper will precipitate all the copper in a metallic state, and a corresponding equivalent of iron will take its place in the solution, forming thus a salt of iron. Now might not this reaction have taken place in the case of this propeller?

Sea water contains soluble sulphates. The coppering of the ship was probably dissolved in the form of a sulphate, and the iron of the screw being brought into contact with this solution, the copper was precipitated and the iron was dissolved, the crust on the casting which was found to be so soft, was then composed of the oxide of iron [$Fe_2 O_3$] probably, together with the carbon of the cast-iron which was left after the iron had been dissolved; and this carbon, which is in fact graphite or black-lead, mixed with the oxide of iron, was the substance forming the crust, which could be so easily cut with the knife. If this reason should be the right one it would be quite out of the question, practically, to use cast-iron propellers on coppered ships unless they could be covered with some pigment which would preclude the possibility of contact between the iron and the salt of copper supposed to be in solution in the water.

F. W. E.

Boston, Mass., May 2, 1864.

[This is doubtless the correct explanation. When two metals in contact are corroded, the action is confined wholly to the electro-positive metal.—EDS.

Fan for Hospitals Wanted.

MESSRS. EDITORS:—I would suggest to the inventors of the United States to contrive a fan of some kind that can be affixed to hospital beds, and which will fan for ten or fifteen minutes without stopping. No one can tell the benefit of such a contrivance or the satisfaction it would give to those who have to lie on hospital beds in the heat of summer. ——.

Baltimore, Md., April 22, 1864.

[A good suggestion; to which we will add that the fan should draw the air out of the room, effecting a gentle circulation. Merely disturbing the air by a fan shaken back and forth is a waste of the power employed.—EDS.

Large American Planing Machine.

MESSRS. EDITORS:—Having read an account of a large English planing machine on page 266, current volume of the SCIENTIFIC AMERICAN, I think it only just to make mention of a planing machine of American manufacture built by Messrs. Poole & Hunt, and now in operation at their works at Woodberry, near Baltimore, Md. It will plane in its present unfinished condition 12 feet square by 20 feet long, but when completed its length will be increased to 45 feet. It is now fitted up with three tool boxes, two on the cross-slide and one on the side, but provision has been made for a fourth one should it be deemed necessary.

J. JONSON.

Woodberry, Md., May 3, 1864.

Indignation vs. Goodyear's Patent.

MESSRS. EDITORS:—In common with many others, I beg leave to express my thanks to you for your fidelity to the people, in reference to your course on the Goodyear Patent, and on numerous other occasions. I can hardly believe that the present Congress will consent to be bribed by mercenary capitalists. It is none the less true, however, that the "love of money is the root of all evil;" still less do I believe that the people will tamely submit to be betrayed by their own representatives. Should this monopoly be extended, many a politician's career is ended forever. Such a popular demonstration will be made by an outraged people as will cause to tingle both the ears of every Congressional culprit. Meanwhile—I would suggest that every man interested in the right cause address his immediate representative in Congress, to use his influence to have the "yeas" and "nays" called upon the final vote. To this action on the part of their public agent, the people have a sacred right, and I trust that it may have a useful result. I cannot, however, but repeat my belief that our present Congress is incapable of the moral baseness of sacrificing their constituents to monied mercenaries.

O.

Maine, April 29, 1864.

Unseemly Extravagance.

The lavish expenditure and love of display which is becoming so prevalent among a portion of our people has called forth many remonstrances; and there are voices—not crying in the wilderness, but strong in their utterances, among men that cannot let the folly pass unrebuked. Nor should they. We reproduce herewith an article upon this subject which recently appeared in the *Evening Post:*—

"A man builds a marble stable on the rear of his lot, at a cost of eighty thousand dollars, and fits up a private theatre over it. Another pays eight thousand dollars for a pair of horses to drive on the road for his pleasure; and many give from fifteen hundred to three thousand dollars for the same object. Another provides a dinner for a dozen friends—rejecting the old superstition of the unlucky thirteenth—and this simple dinner costs one thousand dollars. A children's party is given, in an up-town house, where every child is clad entirely in dresses imported from Paris. An American citizen purchases a house for over one hundred thousand dollars, and tears it down, to rebuild upon its site one yet more costly. These are signs of the times—are they not evidences of a state of things unhealthful, feverish, threatening to the honest simplicity of our political life; and threatening not less evil to the ideas and the principles of which that life has hitherto been a fair exponent? What business have Americans, at any time, with such vain show, such useless magnificence? But, especially, how can they justify it to themselves in this time of war? Some men have gained great fortunes during the last two or three years; but that does not excuse their extravagance. Is there nothing worthier than personal adornment in which to invest their means? Are there no enterprises open to these men of fortune which would benefit the country and their fellows as well as themselves? One man spends two hundred thousand dollars upon a dwelling-house; but he might build with this sum a long row of decent cottages, to rent to people in moderate circumstances; he might enable fifty or a hundred families of workingmen to live cleanly and respectably in New York, and thus make himself a public benefactor—and that without sinking his money where he can never recover it. Or, instead of dressing a few children in silks and jewels, and robbing them of the freshness and charm of youth by these vanities, why not spend the money in sending the homeless children of the city to comfortable farm-houses in the West, where they will be trained to industry and virtuous conduct, and grow up good citizens? The sum wasted on a dozen children at a party would probably suffice to send a hundred to the West, and make honest citizens of them. In England, during the French war, useful enterprises of all kinds were originated, and prospered. There was then, as with

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us now, an inflated currency; great fortunes were made by speculative ventures, as here now. No doubt, too, there was extravagance; but there arose, at the same time, a spirit favorable to useful enterprises of many kinds—such as we wish could obtain amongst us. We have far better opportunities for such use of capital; we have mines, new manufactures, waste lands, to be developed and brought into profitable use; we have comparatively a new country to our back, in which the prudent capitalist can see a thousand opportunities to increase his store, and, at the same time, benefit his countrymen. The citizen, therefore, who wastes his gains upon ostentatious houses, extravagant furniture, dress, or food, commits a crime against his country. And especially is extravagance culpable in New York, where, though but half the island is built upon, there is scarcely a place fit for an honest workingman to bring up his family in, or where they are not exposed to the corrupting influences of squalor and vice."

Facts about Meats.

Every wife and mother owes it to herself, her husband, and her children, as well as to society at large, to prevent waste in every department of the household, whether provisions are cheap or dear, whether the husband is rich or poor; for waste is a crime against humanity, an insult to the bounteous Hand which "giveth us all things richly to enjoy." On the other hand, a true economy is one of the wisest, the best, and ennobling of domestic virtues. A hundred careful experiments were made in England in reference to roasting and boiling meats, in order to ascertain the respective losses:—

Roasted chickens lost 15 per ct.; beef ribs and sirloins, 19 per ct.; geese, 19 per ct.; boiled mutton legs, 10 per ct.; boiled beef, 15 per ct.; boiled shoulder mutton, 28 per ct.; turkeys, 20 per ct.; mutton legs and shoulders, 24 per ct.; ducks, 27 per ent

Boiling beef saves more than four per cent over roasting. If a leg of mutton is boiled it looses ten per cent; if roasted, twenty-five per cent! The fatter meat is, the greater the loss; it should be moderately fat to make it tender; but there is an unprofitable fatness. Eleven pounds of roast rib-pieces loses two pounds, and the bones one pound, so that of the eleven pounds, only seven pounds come to the table. Hence if roast rib-pieces cost in New York, in April, 1864, twenty cents a pound at the butcher's stall, it is more than thirty-one cents a pound on the dinner-table.

It is philosophically true that one pound of clear roast beef is more concentrated than one pound of boiled beef, has less matter in it, and hence may contain more nourishment; but the more concentrated food is, the more unwholesome it is, not only because it requires a greater digestive power to convert it into pure blood, but the sense of sufficiency at meals is induced to a considerable extent by the bulk of what is taken, and if we eat concentrated food until there is bulk enough to remove the feeling of hunger, there is so much nutriment in it that nature can't extract it all in a perfect manner; hence there is not only too much nutriment for the wants of the system, but all of it is imperfectly prepared, and we really get less strength and less pure blood out of it, than if much less had been eaten, or it had been taken in a more bulky, or, if you please, in a more watery condition. This is the reason why dyspeptics and others eat a great deal, but they do not get strong. But if there is too much bulk, there is not enough nutriment, although a great deal is taken into the stomach. Porter and beer, for example, fill up the stomach, and seem to make persons fleshy, but there is but little nutriment and great bulk; but great beer-drinkers are never strong, they are puffy. —*Hall's Journal of Health.*

A PLAN for picking pockets has been invented by the Rebel prisoners confined at Wheeling, Va. When a new prisoner arrives some one of the initiated starts the cry, "fresh fish," which is understood to convey the knowledge of the arrival. When the new prisoner is ushered in he is immediately seized by the occupants of the room, placed in a basket, and thrown up. They continue to toss the new comer in this manner until his pocket-book falls out, when he is released and the pocket-book is confiscated.

Anti-fouling Composition for Iron Ships.

The *Circassian* is in the dry dock at the Charleston Navy Yard, receiving another application of Mr. Davis's *anti-animalculæ composition*, which has been previously used with such success on her bottom. The Navy Department having been informed of the effective character of this preparation have approved of it, and no doubt, within a few months every iron vessel in the navy will have it applied. It will be one of the most servicable things yet introduced into the navy, and by it the great defect of iron vessels—their liability to foul bottoms—will be entirely remedied.

The invention is considered one of great importance and a very desirable acquisition. By it, our monitors and iron-clads will be in a better sea-going condition than ever before. When the *Circassian* was hauled into dry-dock, and her sides exposed to view, she was pronounced the cleanest ship ever before placed in the dock after a cruise. Her bottom was as clean as the day she was launched. The English and French Consuls, Capt. Moodie of the *Asia*, and a number of our principal ship-owners have visited the *Circassian*, and expressed themselves in the most favorable manner regarding the *anti-animalculæ composition*.

[If this article is all that it is stated to be, it is invaluable. European chemists and inventors have labored in vain up to this time to produce a practical non-fouling coating for iron ships.—EDS.]

Increasing the Illuminating Power of Gas.

The editor of the *Sanitary Reporter* (England), in an article on testing gas, says:—"The following are distinct modes of increasing the power of an argand burner consuming ordinary coal-gas; they have all been long known to the writer:—1st. Contracting the central opening to about .45 to .5 of an inch diameter. 2d. By a perforated disk round the burner, and resting on the gallery which supports the burner. 3d. By interposing a thin piece of paper or metal to contract the passage of air through the central opening. 4th. By placing a little contracted cap on the top of the chimney. Now, every one of these contrivances will considerably increase the power of the argand burner. Moreover, all these contrivances act on the simple principle of diminishing the velocity of the current of atmospheric air, and thus allowing the minute particles of carbon, which the gas contains, to be longer suspended in the flame."

Water Meters in Philadelphia.

All large consumers of water in Philadelphia, are to be charged hereafter by the gallon. Mr. Birkinbine, the Chief Engineer, has issued a circular announcing that water meters will be introduced at the expense of the consumers, and bills collected quarterly at the following rates: From one thousand to ten thousand gallons per day, two cents per hundred gallons. For from ten thousand to twenty thousand gallons per day, one and a half cents per one hundred gallons. For from twenty thousand gallons per day and upward, one cent per hundred gallons.

PURE COFFEE.—The editor of the Baltimore *American* visited the Commissary Department of one of the large military hospitals a few days since, and noticed several barrels of dried coffee grounds, the purpose whereof excited curiosity. The polite Commissary informed him that they received twelve dollars a barrel for the grounds. But "what is it purchased for," he asked. "Well," said the Commissary, hesitatingly, "it is re-aromatized by the transforming hand of modern chemistry, and put up in pound papers, which are decorated with attractive labels and high sounding names."

EXTENSION OF THE STEEL MANUFACTURE.—The Whipple File Manufacturing Company, at Ballard Vale, Mass., have erected during the last year, a building 200 by 77 feet, for the manufacture of their own steel, and they claim to make a better article than they have ever been able to purchase. They will soon be producing 30 tuns per week. Their files are cut by machinery.

IN the evidence in regard to a bridge case a few days since, an engineer testified that a measured march of men was the severest test of a bridge, and that the trotting of a horse produced double the vibrations of a twelve or fourteen-tun locomotive.

Notes and Queries

J. W. W., of N. Y.—We know of no method of sighting a gun with perfect accuracy except by actual trial in shooting it The back-sight is generally made to slip so that it can be adjusted by firing.

J. S. B., of Ala.—An illustration of Giffard's injector was published on page 260, Vol. III., new series of the SCIENTIFIC AMERICAN. A steam pipe from the upper part of the boiler terminates in a conical end opposite a similar end of a pipe leading into the bottom of the boiler, a short space separating the two pipes. The feed water fills this space, and when the steam comes in contact with the water it is condensed, forming a vacuum, into which the steam flows with such velocity that its momentum not only carries itself into the boiler, but also a portion of water.

W. C., of N. Y.—If any one allows you to work a low pressure steam engine for manufacturing purposes from the exhaust steam of another engine close by, for $10 a year, we advise you to keep your own counsel and say nothing about it. There is no work devoted to super-heated steam that we know of. If you read the SCIENTIFIC AMERICAN carefully, you will find all the latest intelligence respecting compound steam engines.

W. S. S., of R. I.—We have no receipts for pickling cucumbers that we can recommend at present. Your request is slightly out of our line.

H. B. W., of Conn.—Twisted drills are made at South Bridgewater, Mass., and Newark, N. J., but we do not know the name of the maker in either place.

A. B. M., of Mich.—We know nothing about an instrument for "graining;" you should address some wholesale paint dealers on the subject. Messrs. Reynolds, Devoe & Pratt, 100 Fulton street, can probably tell you.

Reader, of Mass.—E. V. Haughwout & Co., of this city, are manufacturers of china ware, and can give you the information you ask for.

A. L. L., of U. S. A.—Prof. Henry first ascertained that electricity could be passed through wires more than three miles in length. He made the important discovery that the resistance of long wires might be overcome by increasing the intensity of the current, that is by increasing the number of cups or pairs in the battery.

U. C., of Ohio.—There is some defect in your Leyden jar that you do not point out.

Money Received.

At the Scientific American Office, on account of Patent Office business, from Wednesday, May 4, 1864, to Wednesday, May 10, 1864:—

W. & S., of N. Y., $25; T. & W., of N. Y., $25; S. W. K., of Vt., $45; J. P. E., of N. Y., $16; J. S., of N. Y., $16; J. S., of N. Y., $42; H. H., of Ill., $45; J. F., of Conn., $20; F. J. N., of Maine, $20; A. R. A., of England, $16; S. & K., of Prussia, $20; A. H. B., of N. Y., $41; J. B. R., of N. Y., $20; H. B. W., of N. Y., $24; P. B. P., of N. Y., $16; S. D. E., of Pa., $20; I. T. G., of Iowa, $20; P. H., of N. Y., $41; R. D., of N. Y., $16; H. A. A., of N. Y., $41; H. C., of N. Y., $16; P. C., of N. Y., $20; J. W., of Mass., $46; F. M. M., of Ind., $20; E. W., of Mich., $45; J. P. W., of Mass., $54; T. P., of N. Y., $65; M. B., of Ky., $20; G. S. & H. C., of N. Y., $20; W. D. M., of N. Y., $36; J. Van D., of N. Y., $20; M. C., of R. I., $10; E. St. J., of N. Y., $45; F. A. J., of Prussia, $20; T. R., of N. Y., $40; O. E. W., of Pa., $20; J. B. W., of N. J., $20; J. W. S., of Col. Ter., $16; N. S. W., of Conn, $20; S. R. B., of Wis., $70; M. N., of N. Y., $20; H. M., of N. Y., $16; M. S., of Kansas, $20; J. McF., of N. Y., $45; J. O. S., of N. Y., $45; L. G. K., of Mass., $30; J. T., of Wis., $16; F. J. G., of N. Y., $18; S. R. H., of Mich., $25; L. D. C., of Mich., $21; W. S. N., of Conn., $25; I. W. B., of Mich., $16; D. H. H., of Ohio, $15; J. A. D., of Ill., $25; F. L. T., of Wis., $11; S. M., of England, $16; P. & T., of Pa., $26; J. M. G., of Ill., $25; F. C. L., of Iowa, $15; T. & F., of Mass., $15; P. P. P., of Mass., $20; A. & S., of N. Y., $25; D. L., of Vt., $15; W. F., of Mass., $16; McI. & R., of Col. Ter., $100; H. J. M., of Ohio, $25; A. K., Jr., of N. Y., $16; J. G., of R. I., $16; S. & P., of Ill., $17; L. S. M., of N. Y., $25; J. & J. N. P., of Mass., $16; F. & B., of Ill., $21; S. L. O., of Conn., $30; R. W. J., of N. Y., $56; L. G., of Cal., $15; W. F., of Cal., $20; T. D., of N. Y., $25; P. C. R., of Mass., $25; R. W. J., of N. Y., $25; W. G. R., of Mo., $19; J. McK., of Ohio, $25; J. P., of Canada, $20; J. M. A., of Mass., $26; W. D. B., of Mich., $25; G. W. J., of Cal., $20; A. D., of La., $41; C. M., of N. Y., $16; C. M. M, of N. J., $29; D. & B., of N. T., $15; J. P., of Ill., $16; G. F. B., of D. C., $16; J. A. N., of Mass., $16; W. D., of Cal., $25; J. M. H., of Oregon, $45; W P. W., of N. Y., $16; F. J. R., of Ill., $26; E. K., of N. Y., $25; W. B., of Iowa, $25; H. H. H., of Iowa, $25; J. C. P., of Ill., $25; J. L. R., of Ohio, $25; W. H. R., of Ky., $28; J. F. L., of Ill., $15; W. B. T., of Mass., $16; W. C., of Cal., $20; O. P. F., of N. Y., $16; J P. E., of N. Y., $25.

Persons having remitted money to this office will please to examine the above list to see that their initials appear in it and if they have not received an acknowledgment by mail, and their initials are not to be found in this list, they will please notify us immediately, stating the amount and how it was sent, whether by mail or express.

Specifications and drawings and models belonging to parties with the following initials have been forwarded to the Patent Office, from Wednesday, May 4, 1864, to Wednesday, May 11, 1864:—

S. & W., of N. Y.; A. H. B., of N. Y.; F. J. G., of N. Y.; C. M. M., of N. J.; L. S. M., of N. Y.; T. D., of N. Y.; J. M. G., of Ill.; S. L., of Mo.; H. J. M., of Ohio; G. & P., of Cal.; A. J., of Md.; E. C., of Iowa; J. L. R., of Ohio; T. & W., of N. Y.; P. H., of N. Y.; R. W. J., of N. Y.; W. D. B., of Mich.; J. C., of Mass.; J. M. A., of Mass.; L. G. K., of Mass.; J. McK., of Ohio; P. J. R., of Mass.; W. A. J., of Cal.; J. C. P., of Ill.; F. J. R., of Ill.; E. B., of Conn.; J. S., of N. Y.; H. A. A., of N. Y.; W. D., of Cal.; P. & T., of Pa.; S. L. O., of Conn.; L. D. C., of Mich.; W. S. N., of Conn.; S. R. H., of Mich.; W. & F., of Pa.; A. & S., of N. Y.; W. B., of Iowa; W. H. R., of Ky.; J. P. E., of N. Y.

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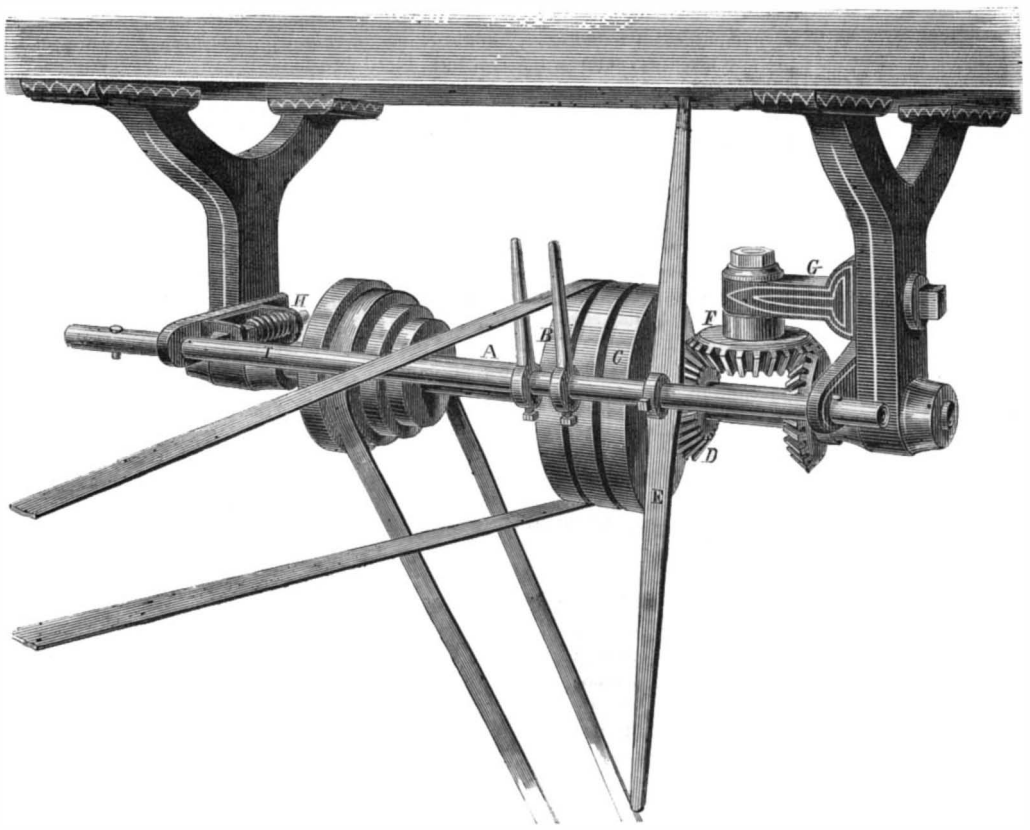
Reversing Gear for Counter-shafts.

It very often happens, in running machines, that a shaft requires to be so arranged that it can be revolved either way, forward or back. This is generally effected by having four pulleys and two belts, one of which is crossed, and turns the pulley it runs on in a contrary direction to its fellow. This plan is costly and troublesome, for many reasons, and the machine illustrated in the engraving published herewith is intended to accomplish the object with but one belt and three pulleys, thus saving the expense of the extra belt and pulley used in the old plan, besides being much more convenient and less liable to get out of order. From the following description the reader will be able to understand it clearly. The shaft, A, has three pulleys on it; the center one is a loose pulley, and the other one, B, is keyed fast to the shaft. The pulley, C, has a bevel gear, D, cut on one side, but the pulley itself is not fastened on the shaft, A. It will be seen, then, that by moving the shipper-bar, E, over from the pulley, B, on to the pulley, C, the intermediate gear, F, suspended from the hanger, G, causes the main shaft, A, to revolve in an opposite direction. When the bar is reversed again the pulley, C, revolves freely on the shaft, A, the same as a loose pulley, and does not interfere in any way with the action of the fast pulley, B. The shaft, A, has a spring stop at H, which catches in recesses in the shaft, I, so that the shaft will be arrested when it has gone far enough to throw the wheels into gear with each other. This is a very simple and efficient arrangement for the counter-shafts of all machines, and is particularly useful in screw-cutting, where the motion has to be instantly changed sometimes. It was patented on the 27th of June, 1863, by C. G. Shaw, of Florence, Mass. For further information address the inventor at that place.

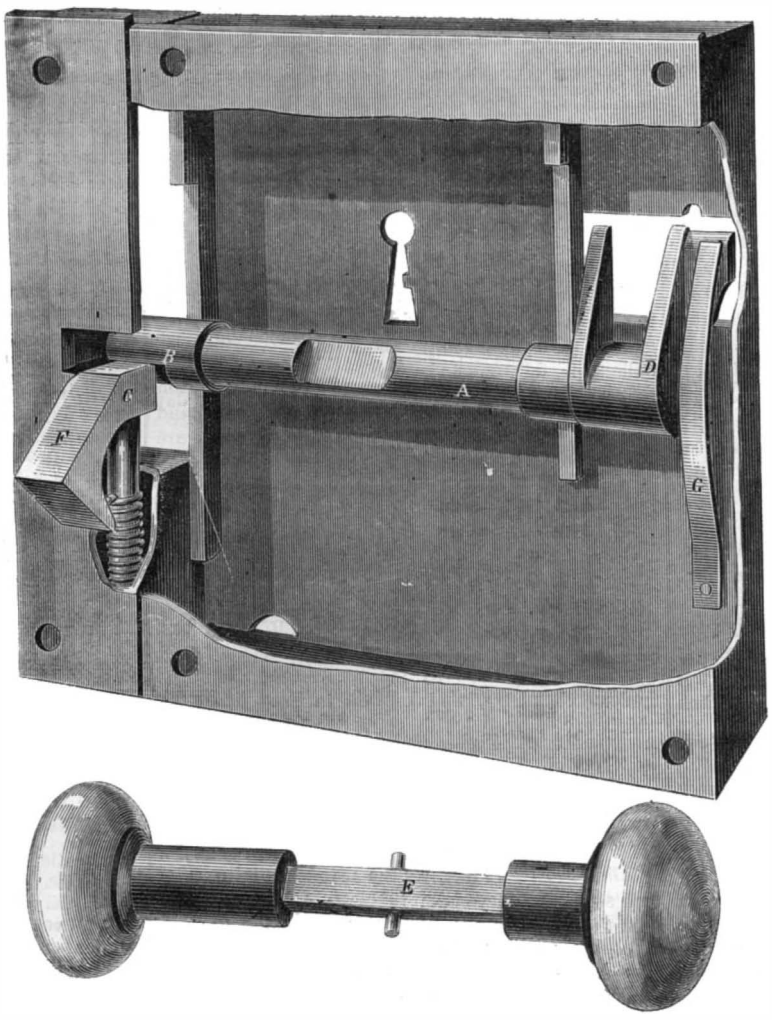


SHAW'S REVERSING GEAR FOR COUNTER-SHAFTS.

Improved Lock.

The above engraving represents an improved door lock, whereby the ordinary method of opening a door by turning the knob is dispensed with, and the apartment can be entered by pulling the handle, as hereafter described. Similarly constructed locks are very much in use in New York and other cities at the present time, and are much liked. This plan furnishes a means of security in addition to the lock and bolt, which may be used in connection with it the same as with other fastenings. In the engraving the plate is broken away to show the interior. The arrangement is merely an oscillating shaft, A, which constitutes the catch; this shaft or bolt is cut out square, as at B, for a quarter of its circumference, so that it rests fairly on the spring stop, C. The shaft has two arms, D, upon it, between which the square part of the handle, E, passes; the small pin this handle strikes against the arms J Thus it will be seen that by pushing or pulling, according to the direction in which the person approaches, the oscillating shaft is partially turned so as to clear the spring-stop, and the door can be opened. When it is to be closed the bolt strikes on the inclined part, F, of the spring-stop and depresses it so that it is out of the way. The case containing this bolt is screwed to the door jamb, and the other part to the door itself. After each operation the shaft is returned to the proper position by the spring, G, on one of the arms.

This is a convenient arrangement for the object in view, and has been patented by Henry Hackman, Jr. For further information address the inventor at Willow-street, Taque P. O., Lancaster Co., Pa.



HACKMAN'S "PUSH-AND-PULL" LOCK.

Influence of Smoke on Vegetation.

In a paper read before the Royal Society, London, partly on the above subject, Professor Voelcker states that he has had many opportunities of becoming practically conversant with the injurious effects which a smoky atmosphere produces on cereal crops, and that he regards a strong deposition of soot on wheat and other corn crops quite a sufficient evidence of the more or less complete injury which the crops must have suffered from the sulphurous acid always present in the air when such sooty deposits are seen on plants. The disadvantages of carrying on agricultural pursuits in the Potteries, or in districts where volumes of black smoke discharge enormous quantities of sulphurous acid into the air, are well known among the more intelligent and enterprising farmers. The injury done to vegetation by the smoke from copper-works has been traced beyond a distance of four miles. Of course it might be asserted that the mischief was caused by the arsenical vapors; but the latter are present in almost inappreciable small quantities, whilst as small an atmospheric percentage of sulphurous acid as the 1-800,000th is injurious to vegetation in wet weather

Entozoa in the Stomach of the Alligator.

Dr A. Wynne Foot gives, in the Dublin *Quarterly Journal of Science*, the following interesting account of the condition of an alligator's stomach which had been attacked by nematoid worms. The animal was reported to have been in the habit of vomiting its food before death. The stomach, of a globular shape, was the size of an orange and distended with air; it contained 115 worms of the genus Ascaris, averaging in length from three to four inches; about one-half of them had spirally-convoluted tails; it also contained ten small pebbles and sharp-pointed flints (one of which was seven lines long); three pieces of charcoal (one of which was thirteen lines in length), and a soft pale coagulum with some yellowish viscid mucus which had an acid reaction. The surface of the stomach was covered with a series of irregular deposits of a fine yellowish matter, which were slightly raised and varied in extent from the size of a pea to that of a sixpence. These gave a sensation to the finger such as that produced by rubbing it against firm sand-paper, and even so adherent that they could not be removed wtthout tearing away the subjacent stratum of tissue. The nature of these incrustations is not mentioned by Dr. Foot, so we presume the material composing them was not submitted to chemical analysis. The facts are, however, of some interest.

MR. BESWICK, a New York astronomer, announces the discovery of a planet, one-ninth the size of the earth, with its orbit between those of Mercury and Venus, revolving around the sun in a period of 94 days. It is seldom seen except during its transit across the sun's disk. Its next transit will be early the morning of June 18, 1864.

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VOL. X. NO. 21..[NEW SERIES.].....*Twentieth Year.*

NEW YORK, SATURDAY, MAY 21, 1864.

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PATENT CLAIMS AND PATENT BUSINESS.

It is our intention, hereafter, to publish the official list of claims of patents one week earlier than usual, and if Commissioner Holloway will but second our wishes in this respect, by a prompt transmission of the copy, we can fully carry out this arrangement. In consequence of this change, the present number will include the issue of claims for two weeks; we therefore suspend, for this week, further extracts from the Annual Report of the Commissioner.

In this connection we would also state that, owing to the large increase in our Patent Office business—which amounts to nearly one half of the entire business of the country in this line—we are obliged to increase our facilities. We have secured valuable and experienced assistants in this department, and are now better prepared than ever before for a large addition of cases, and a correspondingly prompt attention to them.

Through our efficient Branch Office at Washington we have made nearly eight thousand preliminary examinations into the novelty of new inventions. We have efficient assistants constantly at the Patent Office giving personal attention to our cases; and thus, with our additional force, we shall, as heretofore, give every possible facility to all inventors who intrust their cases in our hands.

THE THEORY OF BOILER EXPLOSIONS FROM SUPERHEATED STEAM.

On the inquest into the cause of the *Chenango* disaster, one of the witnesses stated that the generally received theory of boiler explosions is that they result from a mixture of superheated with saturated steam—that the steam by becoming superheated forms a reservoir of heat, which evaporates the minute particles of water carried along by the saturated steam, and thus produces an exploding pressure.

It is probable that a dozen other theories might with as much truth be said to be generally received. At all events, several others have been advanced which cannot be so easily and clearly shown to be unsound.

It is fully proved that the pressure in the boilers of the *Chenango* just before the explosion was 33 to 34 lbs. to the square inch. Now if we suppose a portion of that steam to have been superheated to a temperature equal to red heat, how much heat would that steam have contained, and what would that heat do in evaporating water and producing pressure?

According to the determinations of Fairbairn and Tate, saturated steam formed under a pressure of 33.1 lbs. per square inch has a volume 758 times greater than the water from which it was formed. Consequently a pound of such steam occupies in round numbers 12 cubic feet. Its temperature is 255°, and if we superheat it to 968°, its volume will be doubled; supposing it to expand in the same proportion as air, though Fairbairn found the co-efficient of the expansion of steam to be a trifle greater than that of air. We now have a pound of steam occupying a space in the boiler of 24 cubic feet, and if we introduce a pound of water at a temperature of 255° into this space, what will be the effect? Plainly, the temperature of the steam and water will be equalized; and if there is just enough surplus heat and no more in the steam to evaporate the water, we shall have the space filled with saturated steam at the old pressure of 33.1 lbs. per inch.

But there is not enough surplus heat in the steam to evaporate the water. The specific heat of steam is 0.475, consequently it would take only 339 units to raise the temperature of 1 lb. 713 degrees—from 255° to 968°. The latent heat of steam at a temperature of 255° is 930°, in other words 930 units of heat are required to evaporate 1 lb. of water at a temperature of 255°.

The "great reservoir" of heat in superheated steam, so far from being sufficient to evaporate enough water to produce an explosive pressure, is not sufficient to evaporate enough water to fill its own volume with saturated steam. The introduction of water into superheated steam under the conditions which obtained in the *Chenango* boilers would not have increased the pressure in the least.

WAR AND THE PROGRESS OF INVENTION.

It was very natural that many persons at the outbreak of the war should have prophesied business stagnation and general inactivity of industrial enterprises. "When war wages its wide desolation," said these modern prophets, "the country will be ruined and not one stone left upon another of all that commercial and manufacturing greatness which is our pride and boast." If the reader is curious to see how far these visions have been correct he has only to look at the published list of patent claims in this number of the SCIENTIFIC AMERICAN. There are no less than 218 patents, re-issues, designs, &c., all of which bear date May the 3d and 10th, showing them to be of recent origin. We could not make any comment which would have half the weight of the silent testimony of this long list. It shows convincingly that war, instead of being an evil to the general manufacturing interests, lends increased impetus to all branches of it. Save in the cotton manufacture (which languishes for want of material), there is hardly one other that is not busier than it has been in years gone by. Iron is in such demand that the producers of it command their own price, paper is the same, woolen goods are the same, wearing apparel of every sort is costly, and this in spite of all that inventors are doing to reduce the price by making more of it in less time than was formerly required. The progress of invention during the war has been steadily increasing, and it is difficult to foretell what the consequence would have been to the nation had not the people lent their inventive skill in the hour of trial. Without the *Monitor* we should have been overwhelmed by the *Merrimac;* without the shot and shell of Stafford, Parrott, Sawyer, Shenkl, James, Hotchkiss, and others, we should have suffered many a defeat; without Sharp's rifle, the Burnside breech-loader, the Spencer repeating-rifle, &c., the efficiency of our armies would have been seriously impaired; and we might continue the list indefinitely.

It is not alone in the manufacture of munitions of war that this inventive activity has been so strikingly manifested, but in all the various avenues of traffic and trade, on the farm and in the warehouse, the fact remains the same. There are machines now for every conceivable and inconceivable purpose, but these, so far from supplying the dem, and actually increase it. The sewing machine is a case in point. Let no man cease his exertions to lessen the severity of labor because some other enterprising person has been in the field before him. When this war is ended, the sun will not shine upon a land so blest in all that constitutes true prosperity; it is apparent that those who have new and useful machinery, processes, or materials wherewith to aid manufacturers, will not lose their reward.

GAS ENGINES IN FRANCE.

Le Petit Journal, of Paris, in a long article sparkling with French vivacity, on the uses of the Moteurs Lenoir, states that large numbers of these engines are employed for various purposes in Paris. The writer discourses thus:—

"We have been to the Grand Hotel. It is not far, and we have examined the Moteurs Lenoir laboring for the comfort of the thousand travelers lodged in that caravansera of the great world. There is one which supplies all of the water for the hotel from the cellar to the garret; another raises the dishes from the basement to the fourth story; another turns the machine for breaking the ice and cooling the sillery, the cliquot. Six men were formerly required, half naked and panting, to operate this machine which the little motor turns like a top. Another motor raises to their respective stories the travelers comfortably seated in a saloon disposed for this perpendicular voyage; another raises the baggage, and all this without noise, without fire, without smoke.

"The complaisance of the mechanician charged in the hotel with all of the mechanical service, enables us to see how these motors put themselves in operation, and stop themselves instantaneously.

"What gives to them the movement—origin of their power? It is gas, which an electric spark inflames in the body of the piston. That gas—it is that which the immense *Compagnie parisienne* distributes in all the city. It comes to feed the Lenoir motor as it would feed a burner or a stove."

Le Gaz states that a Lenoir motor consumes about 720 feet of gas in ten hours for each horse-power. This would make, at the New York price of gas, a cost of 1.88 cents per horse-power per day. The fuel for a steam or air engine costs at the present high price of coal, not more than 50 cents per horse-power per day. The bulk and weight of a gas engine are about the same as those of an air engine. Illustrations of these engines can be found on page 32, Vol. IV. (new series), SCIENTIFIC AMERICAN.

IMPROVED SCHOOL GLOBES.

We have heard old gentlemen of the last generation speak of the great improvements which have been made in modes of teaching since they were boys. For instance, they were set to study geography in the letter-press of a book without the aid of any maps! Notwithstanding the great reform that has been effected in modes of education, we believe that the importance of proper apparatus for teaching is not yet fully appreciated. Children are urged through the difficult task of learning long tables of the distances and sizes of the planets, when a single glance at an orrery properly proportioned would give them a far better idea of the structure of the solar system, and one which they would remember for a life time. Of the large sums of money expended for school books we have no doubt that a much larger proportion should be appropriated to apparatus than is now expended for that purpose.

Our attention has been recalled to this important subject by an examination of some globes recently patented through this office, by the Rev. J. R. Agnew. The celestial globe is formed of two hollow hemispheres, with the constellations mapped upon the concave inside, while an orrery revolves within the sphere, thus giving the pupil a correct idea of the relative positions of the heavenly bodies. The outside of the sphere is a terrestrial globe, and by this arrangement the three things—a celestial globe, a terrestrial globe, and an orrery—are combined and furnished for a little more than the usual price of either, or say for one-half of the usual price of all. In this globe the zodiac is vertical, and all of the arrangements give a better representation of astronomical phenomena than globes of the ordinary construction. The merits of this globe ought to secure its general introduction into the common and select schools, and into all families that can afford it. Mr. Agnew may be addressed for further information to the care of the *American Monthly* office, 37 Park Row, New York City.

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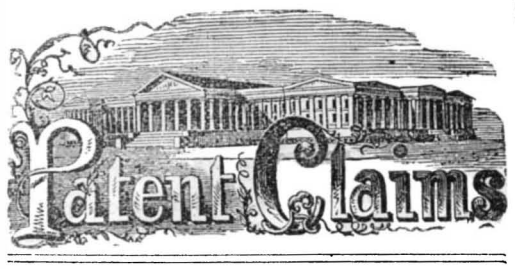

ISSUED FROM THE UNITED STATES PATENT-OFFICE

FOR THE WEEK ENDING MAY 3, 1864.

Reported Officially for the Scientific American.

☞ Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

42,545.—Knitting Machine Burr.—Charles Allardice, Cohoes, N. Y.:

I claim the combination of the chamber, e, in the hub, the dovetail tongues, n, on the sinkers, and the shoulder, s, on the bush, substantially as and for the purpose herein set forth.

42,546.—Tool for channeling Soles.—Alvin Allen, North Brookfield, Mass.:

I claim the employment of a channeling knife and grooving knife applied to a stock to operate together, substantially in the manner and for the purpose specified.

I also claim so applying the knives to the stock or holder that they can be adjusted with respect to each other, or separately removed for repairs or other purpose, as set forth.

I also claim constructing the stock or holder with the surface, t, and lips or guides, h, whereby the depth of cut of the channel and its distance from the edge of the sole is gaged, as set forth.

42,547.—Camp-kettle.—Cyrus Avery, Ashtabula, Ohio:

I claim the herein-described combined pan and kettle, when the several parts are constructed, arranged, and operating as and for the purpose herein specified.

42,548.—Machine for pulling Beans.—Joel Baxter, North Greece, N. Y.:

I claim, first, The employment in bean harvesters, of the pullers, G, having a horizontal, lateral axis upon which they may be rocked.

Second, Attaching the axial shaft, J, of the pullers, G, to the periphery of the wheels, D and D′, substantially in the manner and for the purpose set forth.

Third, The combination of the cam, C, with the pullers, G, and spring, e, or its equivalent, they being constructed, arranged and operating substantially as and for the purposes set forth.

Fourth, The combination of the setting bars, f and f′, latch, h, and spring, n, with the compressing cams, T, arranged and operating substantially as set forth and for the purpose described.

Fifth, Closing the pullers, G, as seen in Fig. 3, by means of the spring, S′, or its equivalent, bars, f and f′, arranged and operating in combination with the lug, v, substantially as shown and described.

Sixth, The arrangement of the reel, F, so as to operate in combination with the revolving pullers, G, substantially in the manner and for the purpose set forth.

42,549.—Box for Mustard and the like Articles.—Robert A. Betts, New York City:

I claim the box of paper or pasteboard with an inner end, b, of similar material and inclosed by the metallic flanged base or end, c, as set forth.

42,550.—Mortise and Draw-bore Delineator.—Reuben Bloss, Rochester, N. Y.:

I claim the combination and relative arrangement of the system of mortise and draw-bore spurs, a b c and e, substantially as specified, when they are used in combination with the bed, A, and the sliding frame.

42,551.—Grain Sieve.—J. J. Bradner, Pine Creek, N. Y.:

I claim the inclined meshes, a a, covering the end spaces between the screens, in combination with said screens arranged as a compound sieve, and having the bevel, G, the whole arranged relatively to the blast, substantially as described and constituting a new article of manufacture.

42,552.—Many-barreled Gun-battery.—James Brett, Mattewan, N. Y.:

I claim, first, The vertically sliding breech-piece and chamber block, C, applied in combination with each other and with the barrel block, B, substantially as and for the purpose herein specified.

Second, The spring, G, applied in combination with the movable breech-piece, D, and with the pins, E E, substantially as and for the purpose herein specified.

Third, The combination of the single hammer, F, and a series of pins, E E, corresponding with the number of barrels, substantially as herein specified.

Fourth, The combination of the hooked levers, N N, and loaded levers, P P, with each other and with the hammer, F, substantially as herein set forth.

Fifth, The shaft, L, and its arms, M M, applied in combination with the hammer, F, and levers, N N P P, substantially as herein described to serve the two purposes of cocking and liberating the hammer.

[This invention consists in certain improved means of securing in place and of providing for the removal of the chambered breech-piece employed for the reception of the cartridges in a many-barreled gun-battery; also in certain improvements in the mechanism for firing the charges in such a battery.]

42,553.—Wire-heddle for Looms.—Darius C. Brown, Lowell, Mass.:

I claim my improved loom harness or heddle metallic eye, as made of two round wires twisted together and condensed in their twists, not only in the continuations of the planes of the sides of the eye, but in directions in other respects, substantially as set forth.

42,554.—Breast Strap Slide.—Andrew Buckham, Newark, N. J.:

I claim in combination with a breast strap slide, the ribs, R R′, and tongue, S, all constructed and arranged as described.

42,555.—Machine for polishing Heels of Boots and Shoes.—Benjamin Q. Budding, Milford, Mass.:

I claim in combination with a polishing tool which has a vibratory movement imparted to it, a mechanism which allows the shoe to be freely turned by hand in every direction necessary to bring all parts of the heel to be operated upon, into contact with the polishing tool.

I also claim the construction of the plate, r, with the shoulder, v, ratchet or ratchets, z, pawl, c′, and strap, w, or their equivalents, substantially as set forth.

42,556.—Locomotive Truck.—James D. Butler, Brooklyn, N. Y.:

I claim, first, Combining two or more connections, J I H, and E K Z, or their equivalents, between the main and truck frames of a locomotive, substantially as described.

Second, The combination with the notched bar, D, for its equivalent, of the pins, L and Q, and the spring, R, or their equivalents, substantially as described.

42,557.—Steam Fire Engine.—Lysander Button & Robert Blake, Waterford, N. Y.:

We claim the combination of two pistons moving in opposite directions at the same time in one steam cylinder operating two pistons in one water cylinder (in opposite directions), connected by two piston rods, one working within the other. The motions of which are governed by a double crank, having direct connection with the piston rods, substantially in the manner and for the purpose described.

We also claim the construction of the single valve, having openings and chambers for the admission and exhaustion of the steam at the ends and center of the cylinder, so constructed as that both pistons are operated upon in opposite directions at the same moment.

42,558.—Machine for cleaning and separating Ore.—Nicholas Carpenter, Ellenville, N. Y.:

I claim, first, A hutch which is made tapering from the top towards the bottom, substantially as and for the purposes set forth.

Second, So constructing and combining the plunger and hutch as to admit of the ingress and egress of the air around the plunger (or in any other manner), as and for the purpose described.

Third, The combined arrangement of an elevator or conveyor, R, with the hopper, I, and any suitable screen, as and for the purpose hereinbefore set forth.

42,559.—Bottling Soda Water under Pressure.—Henry Caise, Pittsburgh, Pa.:

I claim the application and use of a fluid chamber attached to the charging cylinder of a bottling machine, for the purpose of saving the surplus sirup and water passing off while filling one bottle, and forcing it into the succeeding bottle in advance of the fluid that comes from the reservoir, substantially in the manner and for the purposes herein set forth.

I also claim the combination of the faucet, c, and escape valve, t, with the fluid chamber, A, and pipe, L, when arranged and operating as hereinbefore stated for the purposes set forth.

42,560.—Ratchet Drill.—John C. Chapman, Charlestown Mass.:

I claim, first, A self-feeding ratchet drill in which the feeding shaft, G, is thrust out from an exterior sleeve, D, by revolving the sleeve by a ratchet and pawl operated by the hand lever, A, substantially as set forth.

Second, I claim the hollow sleeve, D, and feeding-shaft, G, sliding therein with a spline and feather, in combination with the screw shaft, E, operating in the manner and for the purpose substantially as described.

42,561.—Floating Derrick.—James V. Collins, Georgetown, D. C.:

I claim, first, In combination with the hulls or floats, I J, the abutments, A A, and connecting arches, C C, constructed and arranged substantially as herein shown and described.

Second. I claim the derricks, A, in combination with the truss frames, D D, and brace rods or ties, i i′ m, the whole being constructed and arranged in the manner and for the purpose set forth.

Third, In combination with the above parts, I claim the tackle, l, and grappling hooks, x x, arranged and operating substantially in the manner described.

[This invention relates to a floating contrivance of great strength which is designed to raise sunken vessels and other submerged bodies of immense weight, and also to transfer ordnance, &c., upon the water.]

42,562.—Steam Boiler.—Henry D. Cooper, Boston, Mass.:

I claim the combination and arrangement of the fan-wheel or rotary scraper with the boiler, substantially as and for the purpose specified.

42,563.—Ditching Machine.—Albert W. Cox, Dublin, Ind.:

I claim, first, The arrangement of the parts, N O o P Q R r S T U U′ u u′ V V′ W l, or devices substantially equivalent, whereby the plows and elevator are capacitated for simultaneous elevation and depression while preserving their proper relative positions and the continuity of the driving mechanism, substantially as set forth.

Second, The devices, G H H′ I J K L M, or their equivalents, for enabling the sudden elevation of the excavating mechanism out of the ground and its restoration to the working position without disturbing the adjustment, as herein explained.

42,564.—Harvester.—Thomas Curtis, New Hudson, Mich.:

I claim the combination and arrangement in connection with a grain reaper, of the rake, Q Q, binder, H H′, and carrier, P, constructed and operating severally and in combination with each other, substantially as set forth, whereby the grain as fast as it is cut is carried by the rake to the binder, by which it is bound into bundles and then delivered on to the carrier, by which the bundles are carried along with the machine until a bunch or shock is gathered, when they are deposited together on the ground, the rake, binder, and carrier being operated by the reaper, and the action of the whole machine being substantially as described.

42,565.—Step Ladder.—Thomas Curtis, New Hudson, Mich.:

I claim the combination of the standards, B B, pendent brace, C, roller, E, or its equivalent, and folding braces, D D′ D″ D‴, arranged, connecting and operating substantially as described, so that as the standards, B B, are carried backward from the ladder, they will also, at the same time, by the action of the braces, D″ D‴, be expanded at their lower ends, substantially as and for the purposes set forth.

42,566.—Operating Ordnance.—James B. Eads, St. Louis, Mo.:

I claim the use of the lever, G, and the way or slide, I, for the purpose of retaining the muzzle of a gun in a horizontal line intersecting the center of the port-hole whilst the gun is being raised or lowered for the purpose of aiming it.

Second, The use of the stationary guide or director, K, for the purpose of returning the gun to a convenient level for loading.

Third, The devices as substantially herein described.

42,567.—Washing and Pressing Machine.—M. C. Davis & L. C. Keith, Folsom, Cal.:

We claim, first, The tank, B, and furnace, A, in combination with the pump, C, sprinkler, D, and pressure-board, F, constructed and operating substantially as and for the purpose herein shown and described.

Second, The pressure-board, F, and pump, C, in combination with the hand-lever, I, constructed and operating in the manner and for the purpose substantially as specified.

Third, The hinged sprinkler, D, in combination with the rabeted frame, E, and rods, r, constructed and operating substantially as and for the purpose set forth.

Fourth, The perforated trough, f, in combination with the pump, C, and sprinkler, D, constructed and operating as and for the purposes specified.

[This invention consists in the arrangement of a furnace hot-water tank and pump, in combination with a sprinkler and reciprocating pressure-board operated by a hand lever, connecting with toggle arms, in such a manner that by the action of the hand lever the pump is set in motion and a quantity of water from the tank is forced up on the sprinkler and discharged on the clothes hung under said sprinkler and between it and the pressure-board, and at the same time a gradually increasing pressure is exerted on the clothes, thus alternately charging them with hot water and squeezing them dry until all the dirt has been completely removed from the same.]

42,568.—Machine for Amalgamating.—M. B. Dodge, Black Hawk Point, Colorado:

I claim the employment or use in an amalgamating machine of adjustable shoes attached to or connected with supplemental bars or arms which are arranged with springs and with the main or principal rotating arms to operate in the manner substantially as and for the purpose herein set forth.

[This invention relates to a novel arrangement of the rotary shoes of the machine, whereby the outer ones, which are subjected to the most wear, in consequence of having the greatest speed, may always be adjusted so as to run in contact with the bottom of the pan, and the wear thereby compensated for. In the ordinary amalgamating machines the outer shoes, in consequence of being subjected to more wear than the inner ones, soon become comparatively useless and thereby render the machine much less efficient than it otherwise would be.]

42,569.—Spindle-lubricator for Spinning Machines.—James, Eaton, Boston, Mass.:

I claim an elongated box or receptacle, formed in or upon the lower rail of mules or spring frames to contain a lubricating substance and at the same time afford a suitable support or continuous bearing for the spindle, substantially as herein set forth.

I also claim the combination of a thin coat of non-oxidizable metal with the spindle, the same being applied at its bearing surfaces, substantially as herein described.

42,570.—Smelting Lead Ores.—Alexander H. Everett, New York City:

I claim the improved process herein described for smelting or reducing sulphuretted ores.

42,571.—Construction of Ordnance.—George H. Ferriss, Utica, N. Y. Ante-dated April 19, 1864:

I claim the manufacture of my improved cannon by the combination of a series of metallic disks which are formed by coiling up and welding ribbons or bars of metal whose quality increases in hardness and temper from one end to the other, placing the softest quality in the center of the coil, all substantially in the manner and for the purpose herein set forth.

When a gun is constructed of a central core, and incircling bands or rings, substantially as herein described, I claim securely retaining said rings in their proper positions upon the core by means of key rings, sprung into grooves formed upon the periphery of the core, constituting retaining shoulders thereon, substantially in the manner herein set forth.

42,572.—Device for shearing Sheep.—A. J. Fullam, Springfield, Vt.:

I claim, as an improved article of manufacture, a sheep-shearing device composed of a cutting apparatus combined with a steam engine provided with flexible induction and eduction pipes, substantially as herein shown and described.

[This invention consists in combining flexible tubes with a steam engine and a cutting device, in such a manner that a portable and efficient device will be obtained for shearing sheep, one which may be manipulated with the greatest facility, and perform its work in a perfect manner, and admit of the operator handling the animal so as to properly apply the shearing device to it without any inconvenience or difficulty whatever.]

42,573.—Breech-loading Fire-arm.—John Goulding, Worcester, Mass.:

I claim the combination of the cam, D, and lever, E, with the hinged breech-piece, C, when constructed and operated substantially in the manner and for the purposes described.

I also claim in combination with the hinged breech-piece, C, the friction piece, m, for the purpose of preventing the hinged breech-piece from closing when the gun is turned on one side to discharge the empty cartridge, substantially in the manner herein described.

42,574.—Hitching Horses to Vehicles and Plows.—John Graham, Ceresco, Mich.:

I claim the employment of the modified double-tree, D, in combination with the hitching strap, S, and roller, R, arranged and operated substantially as and for the purpose herein specified.

42,575.—Harness Motion of Power Looms.—James Greenhalgh, Pascoag, R. I.:

I claim, first, The projections, i i′, upon the hooks, D D, in combination with the knives, d d′, whereby the knives besides opening the shed in the usual manner are made to produce the closing of the shed, substantially as herein described.

Second, The upright connections, f f, applied between the lower jacks and the upper parts of the hooks, D D, and arranged between the hooks and the loom framing, substantially as and for the purpose herein specified.

Third, Operating the knives by means of the rockers, k k′, which are fast upon the same rock shaft, l, and one of which is longer than the other, substantially as and for the purpose herein described.

[This invention relates to that kind of harness motion for fancy or figured weaving in which the opening of the shed is effected by the action of what are called knives upon hooks attached to jacks, with which the harness is connected, the action of the said knives being controlled by means of a studded pattern chain or cylinder.]

42,576.—Sewing Machine.—William O. Grover, West Roxbury, Mass. Ante-dated April 26, 1864:

I claim the combination of a stationary face cam and a revolving slot with a crank pin, substantially in the manner described, to control the movements of the needle-bar in sewing machines.

42,577.—Car-axle Lubricator.—Thomas C. Hargrave, Roston, Mass.:

I claim the combination and arrangement of the outside spring, f, the rod, e, the support, d, and the lubricating wheel or roller, c, with the journal, b, and housing, j, substantially as and for the purpose set forth.

42,578.—Car-axle Lubricator.—Thomas C. Hargrave, Boston, Mass.:

I claim the combination and arrangement of the bent spring, d, and lubricating wheel or roller, c, with the journal, b, and the housing, g, substantially as and for the purpose set forth.

42,579.—Sheep Shears.—J. A. Hadley, West Waterford, Vt.:

I claim the employment or use of one or more rods or guards, E, attached to a plate, D, which is secured by a pivot or screw, a, to one of the blades, A, of a sheep shears and is connected to the other blade, A′, by means of the slot, b, and screw, c, all arranged substantially as and for the purpose herein set forth.

42,580.—Mode of pitching Barrels.—J. F. H. Holbeck & Matthews Gottfried, Chicago, Ill.:

We claim, first, The application of heated air under blast to the interior of casks, by means substantially as described and for the purposes set forth.

Second, The use of a removable conductor, E, in combination with a furnace and blowing apparatus, arranged and operating substantially as described.

Third, The tube-holding plate, i, in combination with the removable pipe, E, and blast furnace, A, substantially as and for the purposes described.

42,581.—Trip-hammer.—Bennet Hotchkiss, New Haven, Conn.:

I claim arresting the stroke of the hammer by means of the latch, L, or its equivalent, when the said latch is arranged in combination with the hammer and cross-head, to operate automatically in the manner and for the purpose substantially as described.

42,582.—Mitre-box.—Daniel Howell, Jr., & Moses K. Kellam, New York City:

We claim, first, The combination of the upright gaging rollers upon adjustable arms, B and C, with the facing-board, F, and the bed-board to make an adjustable bevel jack, in the manner substantially as above described.

Second, The construction of the combined arms, H and I, Fig. 4, Plate 1, to form the proper opposite angles for sawing the moldings of any regular figure, in the manner described.

42,583.—Saddle.—L. T. August Leurs, Liege, Belgium:

I claim, first, The combination of the adjusting straps, e, with the props, g h, pads, D E, and side-bars of the saddle-tree, A, constructed and operating in the manner and for the purpose specified.

Second, The malleable iron bow and cantel, B C, with braces, b c, and flanges, b′ c′, in combination with the saddle-tree, A, constructed and operating in the manner set forth.

[This invention relates to an improvement in that class of saddles which are provided with self-adjusting pads, so that the same adapt themselves readily to the motions of a horse or to the changes in the shape or form of its body. Further information concerning this invention may be had of Alex. Trippel, 18 Exchange Place, New York.]

42,584.—Manufacture of Enameled Leather, Cloth, &c.—Francis Longhurst & Albert L. Murdock, Boston, Mass.:

We claim to apply, as a first coat, to leather or cloth, in the process of patenting or enamelling, a soluble elastic paste or fluid, composed of variable proportions of rosin or pitch, candle pitch, naphtha or bituminous coal, sulphur, lampblack, litharge, gutta-percha and india-rubber, vulcanized or pure, and linseed oil, prepared and treated, substantially as for the purposes herein described.

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42,585.—Grooving or Panel Plow.—William S. Loughborough, Rochester, N. Y.:

I claim, first, The above-described panel plow or plane, when constructed, arranged, and combined in the manner and for the purposes specified, as a new article of manufacture.

Second, Securing the gage of the fence, B, at any desired point by operating a single screw, E, substantially in the manner specified.

42,586.—Railroad Rail Support.—Wm. S. Mallory, Batavia, N. Y.:

I claim, first, The construction of a rail chair or support to the rails, having adjustable jaws, that can either be attached to the sleepers or to a base plate, and the latter fastened to the sleepers, when saidjaws or one of them is held and retained in position by means of corrugations upon the bottom portion of them, fitting to corrrsponding corrugations upon the base plate, and made adjustable by means of a set screw and slot in the jaws, and when the upper and inner ends coming in contact with the rails are furnished with rollers, in the manner and for the purposes set forth.

Second, I claim the construction of a shoe for the reception of the rails with flanges on each side thereof to prevent lateral movement, on one of which flanges a bar extending across the joints of the rails in which rollers are placed to prevent friction, said shoe, or the flanges of the rail if desired, when no shoe is used being held in position upon the chair or sleeper by means of screws or spikes with rollers in the head thereof, so adjusted as to hold either the shoe or the rail, in the manner and for the purpose set forth.

Third, I claim placing a roller or rollers in the sides of the rails and also in the bottom of the same, arranged and constructed as described and for the purpose set forth.

Fourth, I claim supporting the ends of the rails and connecting them together by means of hollow tubes, slotted or otherwise, and secured to the rails by rings or in any suitable manner, constructed and arranged substantially as described and for the purposes set forth.

Fifth, I also claim supporting and connecting the ends of rails by means of side pieces on each side, extending across the joints, with rollers inserted therein and bolts passing through slotted holes in said side pieces and also in the rails, constructed and arranged as described and for the purposes set forth.

Sixth, I claim securing and holding rails fast to a cross tie at the ends and also near the longitudinal center thereof, by means of the arms, s, bolted through the rail and secured to the tie, as described,

Seventh, I claim making the bottom shoe, with or without vertical flanges, and holding the rails thereto by means of the said side pieces across plate under said shoe with bolts passing through holes in the same near each end with nuts under the bottom forming a kind of stirrup, and said bolts passing up through the shoe, one of said bolts being in the form of an elbow, passing through said pieces and rails and an eye upon the top of the other bolt secured by a nut, said bolts having rollers on the side bearing against said side pieces, and also bolts passing through the shoe with or without the said cross-piece, upward between the side pieces and the rails with rollers on the same with two eyes on the top through which a cross bolt passes on a roller and secured by a nut, and thus allowing free action but still holding the rails firmly to the shoe; and I claim also the means of tightening the same by the set screw, n, the whole combined and arranged as herein set forth and described.

Eighth, I claim the combination and use of rollers, balls, and wheels, with the rails and side pieces, bases, or supports, for the purpose herein set forth and substantially as described.

Ninth, I claim sustaining the ends of the rails by the jogs on each end thereof in combination with the side pieces, and the bolts and fastenings, u u, substantially as described and for the purposes set forth.

42,587.—Soda Fountain.—John Matthews, Jr., New York City:

I claim combining with the iron and the enamel a third substance, of the character and for the purpose substantially as set forth.

42,588.—Parlor Cooking Stove.—Matthias Mead, Lowell, Mass.:

I claim the above described arrangement of the fire-pot, A, the boiling or smoke chamber, E, the ash chamber, B, the oven, C, the descending smoke flues, G G, and base chamber, D, and the ascending smoke-flue, H.

I also claim the arrangement of the hot-air chamber, K, fire-pot, A, smoke chamber, E, ash chamber, B, oven, C, descending smoke flues, G G, and ascending smoke flue, H.

I also claim the arrangement and combination of the air induction and edaction pipes, L M, the oven, C, the smoke flues, G G H, the ash chamber, B, and the fire-pot, A, the whole being substantially as described.

I also claim the arrangement of the descending ash and air conduit, I, the ash chamber, B, oven, C, the descending smoke flues, G G, and the base chamber, D.

42,589.—Concrete Pavement.—Henry Myers, Hyde Park, Pa.:

I claim a concrete pavement composed of the ingredients above specified, and mixed together in about the proportion set forth, in combination with the foundation, prepared as described.

[This invention relates to a composition which is particularly applicable to side-walks, cellar floors, &c., and is mixed together of sawdust, pulverized clay, coal ashes, sand, and coal tar, and spread on a foundation prepared of iron slags, cinders, coarse gravel, or other indestructible material, cemented together by coal tar.]

42,590.—Railroad Car.—Wm. Miller, Boston, Mass., & Hamilton E. Towle, New York City:

We claim, first, The combination of a lever and pawl and ratchet with the draft bar, in the manner and for the purpose specified.

Second, Starting a car with mechanism, substantially as described, in such a manner that the first draft of the tractive force operates to turn the wheel with a leverage greater than its radius.

42,591.—Combined Abdominal Supporter and Corset.—Mrs. S. A. Moody, New York City:

I claim a pair of stays or corsets, A, provided with an extended front, or one projecting down to the lower part of the abdomen, and having elastic plates. b b, inserted or fitted in it, in connection with the side lacings, c, and air bag, B, all arranged substantially as and for the purpose set forth.

42,592.—Collet.—S. A. Morse, East Bridgewater, Mass.:

I claim in combination with the movable jaws, cams and ring, the conjoined action and use of the V-shaped end of one of the jaws, and the single point of the opposite jaw by means of which the drill is held firmly at three bearing points which are always equidistant from the center, whether the drill shank be large or small.

41,593.—Oil Can.—L. H. Olmsted, Newark, N. J.:

I claim, first, The attachment of a collar to the tube, for the purpose specified.

Second, Combining a raised and round top with a semi-spherical bottom, as shown and described.

Third, Combining the semi-spherical bottom and weight with the flexible top as shown.

42,594.—Connection for Floating Barrels.—Robert W. Park, Pittsburgh, Pa.:

I claim the combination and arrangement of the lugs or ears, T T, with the eyes or rings, S S, long bolt, R, ears, C C and hooks, N N, of a clamp for holding floating barrels, constructed and operating as herein shown and set forth.

I also claim securing the barrels together by means of the screw bolts, L L, passing through the lugs or ears of the clamps, in combination with a board or its equivalent, placed between the heads of the barrels held and supported in the manner as herein set forth.

42,595.—Hoisting Machine.—F. B. Perkins, Roxbury, Mass.:

I claim the employment in a hoisting machine of racks and pinions, having teeth of the character shown in the drawing, and which gear with each other in combination with a platform and with worm screws and worm wheels or their equivalents, the mechanism being actuated by an endless belt or chain or by other equivalent means of imparting motion, and being constructed and operating substantially as described.

This invention relates to a new and improved hoisting machine, designed for hoisting and lowering goods in warehouses, and for other similar purposes. The invention consists in the means employed for operating the platform or receptacle on which the goods to be elevated and lowered are placed. Said means being comprised in racks attached to vertical posts between which the platform or receptacle works pinions, worm-wheels and screws, which are connected with the platform, and are put in motion by an endless belt.]

42,596.—Ore Separator and Amalgamator.—Herman Pietsch, New York City:

First, I claim the employment or use of a series of pans, d e f g, revolving on a shaft, G, in combination with a similar series of pans, d′ e′ f′ g′, revolving on a shaft, H, in a direction opposite to the first pans and arranged in such relation to the same that the bottoms of one series form the covers of the other series, substantially as and for the purpose herein specified.

Second, The zig-zag channel, k′, formed by the rims of the pans, d e f g, d′ e′ f′ g′, rising alternately on the inner and outer peripheries, substantially as and for the purpose specified.

Third, The combination of the stationary mercury cups, m s, agitators, J L, tank, A, and rotary pans, d e f g, d′ e′ f′ g′, all constructed and operating in the manner and for the purpose substantially as set forth.

[This invention consists in the use of a series of pans, each provided with a toothed top and plain bottom, revolving in opposite directions, in combination with a zig-zag channel forming the communication between the succeeding pans in such a manner that the ore and water, while passing through the several pans, is thoroughly agitated and gradually freed from its heavy particles, which precipitate upon the bottoms of the different pans; the invention consists, further, in the application of two pans containing mercury and communicating with each other through a central channel in combination with suitable rotary agitators causing the ore to enter the mercury pans and to be distributed and spread within the same in such a manner that all the heavy parts of the ore will be retained and not a particle of the precious metals contained therein will be allowed to escape.]

42,597.—Machine for crimping Barrel-hoops.—Martin Reed, Rochester, N. Y.:

I claim the combination of the roughing cylinder, C, with the notched feed board, E, and feed roller, F, constructed, arranged and operating substantially in the manner and for the purposes specified.

42,598.—Preparing Barrels to Contain Petroleum, Coal Oil, &c.—Louis S. Robbins, New York City:

I claim the combination formed by saturating the outer surface of the cask with heated oil and the body of the staves and heads with soap suds or an alkaline solution, substantially as and for the purpose set forth.

42,599.—Combination of Pen-holder, Pen-case and Money-safe.—W. E. Rose, Waukon, Iowa:

I claim a circular case or box, provided with a recess to contain a pen when not in use, and also provided with a hole to receive the pen when in use, all arranged to form a combined pen-case and pen-holder, substantially as described.

I further claim the coin or money recess in said box to form a combined pen-case, pen-holder, and porte-monnaie, substantially as set forth.

[The object of this invention is to obtain a portable device for the pocket, or one which may be suspended on a neck chain, and be capable of being used as a pen-holder, pen-case and porte-monnaie, and at the same time be simple in construction.]

42,600.—Black-washing Mold.—George Ross, Newport, Ky.:

I claim the flanged casing, D, in combination with the sprinkler, A, constructed and operating substantially as and for the purpose shown and described.

Second, The combination of the board, I, with the casing, D, and sprinkler, A, substantially as and for the purpose set forth.

Third, The head, B, in combination with the sprinkler, A, and casing, D, as set forth.

Fourth, The employment or use of the fender, H, in combination with the sprinkler, A and casing, D, constructed and operating in the manner and for the purpose substantially as specified.

42,601.—Folding Bedstead.—Joseph Sutter, New York City:

First, I claim the folding side rails, c, set at an inclination and formed with the ledges, 6 6, receiving the slats, or folding bottom framed, d, as specified.

Second, I claim the table or desk top, e, applied as specified, in combination with the folding bedstead as set forth.

42,602.—Bottoms for Chairs and Sofas.—Joseph Sutter, New York City:

I claim the springs applied to the ends of the webbing to draw the same out flat or nearly flat when not under strain, or to allow said webbing to yield to a weight as specified.

42,603.—Egg-beater.—Wm. Saladee, and E. M. Luckett, Philadelphia, Pa.:

We claim the application of the opposite grooves or guide-pieces, a4, a4, on the inner side of the containing vessel, A, and the supplementary bar, D, in combination with the beaters, B B, bar, a2, and cover, a′, the whole being constructed and arranged to operate together substantially in the manner described, for the purpose specified.

42,604.—Call Bell.—Deming W. Sexton, East Hampton, Conn.:

I claim the combination of a double-knobbed horizontal finger bar with a doubled clapper, suspended by a pivot above the body of the bell, substantially as set forth and for the purpose specified.

42,605.—Construction of Cog-wheels.—Abraham Skaats, Jr., New Haven, Conn.:

I claim constructing the teeth or cogs of gear wheels substantially as described, so that without undue friction continuity of action of one wheel upon the other shall be effected irrespective of their relative position within the limits determined by the depth of teeth or cogs.

42,606.—Ventilator.—James L. Smith, Tuscola, Ill.:

I claim the compartments, C and F, in combination with pipes, B H E and D, the whole constructed in the manner and for the purpose herein set forth.

42,607.—Clothes-wringer.—Charles F. Spaulding, St. Johnsburg, Vt.

I claim the combination of the eccentric guides, h h, with the rollers, C D, and their supporting frame, the whole being so as to enable or cause the rollers to operate substantially as hereinbefore explained.

I also claim the combination of the slotted guards, G G, with the rollers, C D, the eccentric guides, h h, and the supporting frame, the whole being arranged as specified.

I also claim the arrangement and combination of the elastic springs, c c, the eccentric guides, h h, and the rollers, C D.

42,608.—Machinery for Forming Hoop-skirt Clasps.—Franklin J. Terrell, Ansonia, Conn.:

I claim the male forming die, d e f, composed of two or more independently-operating pieces in combination with a series of rotating female-forming dies, b b substantially as and for the purpose herein specified.

[This improvement is more particularly designed for the manufacture of the various kinds of metallic clasps used in the manufacture of hoop skirts, and is attached to the ordinary cutting-out press by which the blanks are cut from the plate. It consists in the employment for forming the blanks after they have been cut to the required form and have passed through the cutting die, of a male-forming die made of two or more attached but independently movable parts and a series of rotating female-forming dies.]

42,609.—Gas-burner Socket.—Joseph Todd, Madison, Ind. Ante-dated April 1, 1864:

I claim uniting the two pieces of the gas socket by means of a male and female screw thread by which the elastic interior packing is rendered adjustable, substantially as herein described.

42,610.—Coal Stove.—W. B. Treadwell, Albany, N. Y.:

I claim, first, The fire-pot, C, constructed substantially as described to operate in the manner set forth. (See drawings, Figs. 1 and 5).

Second, Ring, n, within feed cylinder, K, drawings Figs. 1 2 and 3, as described, for the purpose set forth.

42,611.—Felting Machine.—Enoch Waite, South Natick, Mass.:

I claim the combination and arrangement of the feeding apron B, the feed rollers, C C′, the rotary beater, D, the batting apron F, the roller, G′, and the case, E, the whole being made to operate together and with felting aprons and platens or their equivalents, substantially in manner as hereinbefore specified.

I also claim the combination and arrangement of the pasting apparatus (viz., the brush, N, and its trough, O), the carrying and drying rollers, P, Q, and the receiving beam or roller, R, the whole being as hereinbefore specified.

I also claim the combination and arrangement of the rotary pasting brush, N, and its trough Q, with the carrying and drying and finishing rollers, P Q.

I also claim the combination, composed not only of the carrying and drying rollers, P Q, made so as to be heated as described), and an apparatus for applying paste or cement to a sheet of paper, but of a set of felting aprons and platens, as described, and a mechanism for making a bat and introducing it between the felting aprons, the whole being constructed and to operate essentially as, and for the purpose or objects as hereinbefore explained.

42,612.—Corn Planter.—John Waterman, Keokuk, Iowa:

I claim, first, The adjustable boxes, I, employed in combination with the hopper, E, to plant any desirable number of hills of corn at each motion of the slide, or adapt the machine to conform to the various distances at which the relative hills may be formed.

Second, In combination with a seeder constructed as described, I claim the laterally adjustable covers, K K′ k k′, constructed and operated, substantially as specified.

[This invention consists in a novel machine of simple and cheap construction, and which beside being superior in its operation as a seeder or corn planter, is adapted to be converted with facility into an adjustable harrow.]

42,613.—Machine for twisting and plating Cords.—J. T. Williams, Newark, N. J.:

I claim, first, The employment or use of an endless belt, J, substantially such as herein specified, for the purpose of insuring an even distribution of the covering or plating material.

Second, The use of an endless belt, with frames, O, or their equivalents, as described, for the purpose of pulling out and laying the required length of strand previous to the twisting operation.

Third, The application of hooks, e, or their equivalents to the laying belt, N, as and for the purpose set forth

42,614.—Projectile for Rifled Ordnance.—Wm. S. Williams, Canton, Ohio:

I claim the combination of the ribs, a, with the expansible rings, D D D′, and sleeves B B′, all constructed, arranged and operating substantially as and for the purposes set forth.

[In this invention packing rings of peculiar construction are employed in connection with a longitudinally sliding sleeve, in such manner that when the discharge takes place the rings will be effectually forced into the grooves of the gun from which the shot is projected.]

42,615.—Binder Attachment for Sewing Machines.—Geo. Wisler and Chas. H. Peters, Cincinnati, Ohio:

We claim the combination of the convex slotted tape guide, C C,′ the concave-faced tapering block, E, and adjustable edge turners D D′, all constructed and operating substantially as and for the purposes described.

Second, The described combination with the parts A B C D D′ E,′ of the reel or tape holder, I J K L, substantially as set forth.

42,616.—Machine for boring Curved Cylinders.—William Wright, New York City:

First, I claim the combination of the main shaft, C, the arm, D, the cutter stock, E, and the gearing or its equivalent for driving the cutter stock, the whole arranged and operating substantially as and for the purpose set forth.

Second, The feed screw P, nut, N, swinging socket, Q, and feed shaft, M, the whole applied in combination with each other and with the arm D, to operate substantially as herein specified.

42,617.—Pump.—Martin W. and John Zimmerman, Earl Township, Pa.:

We claim the use of a single wire, in combination with the regulating screw, y, burrs, v v, rocker shafts and arms, B H R, weights, L, operated by a water wheel and crank in the manner and for the purpose specified.

42,618.—Pegging Jack.—Wm. Billings of Brooklyn, N. Y., assignor to Abraham W. Godfrey, New York City:

I claim the adjusting screw, C, in combination with the standard, B, swinging bar, and adjustable gudgeons, c, all constructed and operating in the manner and for the purpose substantially as herein shown and described.

[This invention consists in a swinging bar, the gudgeons of which are adjustable in different notches in the edges of the uprights which form their bearings, in combination with an adjusting screw passing through the standard which supports the heel end of the last, in such a manner that by means of said movable passage and adjusting screw the swinging bar can be readily adjusted for lasts of different sizes and shapes and that said lasts are firmly supported at the heel and at the toes.]

42,619.—Treating Leather, &c.—Joseph Burrill, (assignor to himself, A. S. Moore and J. A. Johnson), Lynn, Mass.:

I claim the within-described process of treating leather or paper by exposing it to the solutions herein set forth, and mixed together substantially in the manner and about in the proportion specified.

42,620.—Compresser for Flyers in Spinning Machines.—Simeon Goodwin and John A. Emery (assignor to Charles A. Shaw), Biddeford, Maine:

We claim changing the direction of the thread of roving being wound on the bobbin, at or near the heel or flyer end of the compresser, from a spiral movement around the body of the same, to a horizontal direction or movement along the back or outside of the body of the compresser, and conducting the said thread (when such a change is made in the direction of its movements at that point), along the body of the compresser protected from both heads of the bobbin, substantially in the manner and for the purposes specified.

42,621.—Nipple Guard for Fire-arms.—Benjamin Lilly (assignor to Henry Charlton), Birmingham, England. Patented in England May 12, 1863:

I claim the improvements in the construction of snap caps or nipple protectors for fire-arms, substantially as herein described.

42,622.—Sewing Turn.—Gordon McKay, of Boston, Mass., & Lyman R. Blake, Quincy, Mass., assignors to said Gordon McKay:

We claim the process herein described, the same consisting in the employment of a pattern in connection with a ring gage or guide operating substantially as and for the purpose described.

42,623.—Coal Hod.—J. R. Miller, Cincinnati, Ohio, assignor to himself and J. W. Wayne:

I claim the combination with the body, A, and foot, F, of the beveled-edged slab, C, and metal plate, D, upset over the edge of the said slab, when the compound bottom thus formed is applied within the downwardly-converging portions of the body, A, and foot, F, in the manner herein shown and explained so that any depression of the bottom, will tend to lock the whole more firmly together without strain upon the nails.

42,624.—Mode of manufacturing Tin Cans, Caddies, &c.—John W. Millet, Batchellorville, N. Y., assignor to himself, Isaac Noyes, Jr., and T. C. Fanning:

I claim a mode or process of manufacturing boxes, cans and caddies by first coiling, crimping and heading the rim, then inserting the top or bottom, after which the rim is clamped or held around the top or bottom while it is being soldered or otherwise fastened.

42,625.—Circular Brush.—Martin Robbins and Charles Heery, Cincinnati, Ohio, assignors to said Charles Heery:

We claim as an improvement in the manufacture of brushes, swabs, emery wheels, and analogous articles, the combination of the bristle washers, D, substantially as described, with screw clamps of any suitable form, either with or without central stems or intermediate washers.

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42,626.—Mode of cutting Coal and other Minerals.—Thomas Harrison, Tudhoe, England. Patented in England Dec. 2, 1863.

I claim the combining a turbine with a truck trolly or other carriage, substantially as described, and the combining therewith rotating cutters so arranged that the carriage can be caused to travel gradually forward as the work progresses and the cutters set to cut a greater or less distance into the coal mineral or stone, as required, substantially as above described.

42,627.—Gage for measuring the Pressure of Explosive Gases, &c.—Thomas Shaw (assignor to himself and P. S. Justice), Philadelphia. Pa.:

I claim, first, The employment of a chamber, Y, when provided with a valve, a, and in combination with a gage, for the purpose specified.

Second, The employment of glycerine in combination with the gage, for the purpose specified.

Third, The employment of the metallic disk, S, in comb nation with gum disk, m, for the purpose specified.

Fourth, The employment of faucet, M, in combination with valve, i, for the purpose specified.

42,628.—Grain Separator.—Henry B. Thomas (assignor to Henry F. Hart), Chicago, Ill.:

I claim, first, The separation of mixed grains by means of the cells, a, when the same are applied to the exterior surface of cylinders or their equivalents.

Second, I claim the cylinders, A A, provided with the cells, a a, substantially as shown.

Third, I claim forming the cells upon the surface of the cylinders, A, by means of the narrow strips of metal, bent as shown and described, or by any equivalent means.

Fourth, I claim one or more brushes, B, used in combination with a surface provided with the cells, a, substantially as and for the purpose set forth.

Fifth, In combination with the cylinders, A A, or their equivalents, I claim the shoe, E, provided with the screens, f and h, and the return boards, e and j, when constructed substantially as shown.

42,629.—Polishing and grinding the Edges of Heels for Boots and Shoes.—James M. Thompson and George B. French, Stoneham, Mass., assignors to Seth D. Tripp, Lynn, Mass.:

We claim the combination of the rotary clamps, F G, with the turning and vibrating holders, H I.

We also claim the oscillating frame as composed of the holders, H I, the actuating spring, L, and the toggles, O, P, arranged and combined substantially as specified.

We also claim the combination of the slider or sliding bearing, g, the toggles, O P, the spring, R, and the treadle, M.

We also claim the combination consisting of the rotary clamps, F G, the turning and vibrating holders, H I, the actuating spring, L, the toggles, K K, the slider or sliding bearing, g g, the operating toggles, O P, the spring, R, and the treadle, M, the whole being arranged, constructed and applied to a grinding or polishing wheel, D, so as to co-operate and operate therewith, substantially as specified.

We also claim the arrangement of the cleansing wheel, E, with the grinding wheel, D, and the mechan sm, as described, for holding, operating and guiding the shoe, or the heel thereof, to be ground.

42,630.—Operating Ships' Guns.—Sarah Ward, New York City, administratrix of James H. Ward, deceased, late of the U. S. Navy:

I claim, first, So applying the rolls and supports underneath the slide, rails or ways, on which the gun and its carriage runs in and out, and is trained and at or near the center thereof, as that the ways shall tip when the excess of weight is on either side of said rolls or central support, substantially in the manner and for the purpose set forth.

Also, in combination with the tipping slide, ways, or rails on which the gun and carriage are worked, the tail-piece connected thereto, but removable at pleasure, said tail-piece resting upon the gun deck when in use, for the purpose of readily mounting the gun and carriage on the slide, substantially as described.

Also, in combination with the breeching or breech tackle, for catching and restraining the recoil of the gun, the elastic ring, for gradually checking the strain on the breeching, substantially as described.

Also, in combination with the tipping slide and tail-piece, a turntable for turning and shifting the gun from one port to another, or from one side of the ship to the other, substantially as described.

42,631.—Plow.—F. F. Cary, New York City:

I claim, first, The roller, D, when the diameter at the lower end is equal to or greater than the upper end, as shown and described, and composed of one piece or divided transversely near the middle or smaller diameter, said roller working upon a vertical or nearly vertical spindle, S, substantially as and for the purpose described.

Second, The roller, D, as described, in combination with the toe, C, scraper, G, and one or both of the wheels or disks, F and F′, arranged and operating substantially as set forth.

RE-ISSUES.

1,662.—Grain Separator.—Aaron Higley, Warren, Ohio. Patented Dec. 3, 1861:

I claim, first, The shoes, B J, when superimposed one above the other, being suspended and operated in such a way as to cause the lower shoe to vibrate with less velocity than the upper one, and so arranged as to admit a wind spout, G, to be interposed between said shoes.

Second, I claim so hanging and operating the lower shoe that its lateral vibration shall be at a less velocity and longer stroke than the upper shoe, as and for the purpose specified.

Third, I claim the arrangement of the hopper, A, sieves, e f g h i j, imperforate plates, o v, and troughs, A′ B′ W X, with shoe, B, the whole combined and operating in the manner and for the purpose set forth.

Fourth, I claim the arrangement of the sieves in the shoe, B, with the endless apron, F, trunk, G, fan, I, sieves, K L M, in the shoe, J, and drawers, E O R, the whole combined and operating in the manner and for the purpose described.

Fifth, I claim the combination of the sliding gate or valve, a, screw bolt, b, and nut, c, for regulating the size of the seed aperture in the hopper, H, substantially as described.

1,663.—Breech-loading Fire-arm.—Joseph Rider, Newark, Ohio, and E. Remington & Sons, Ilion, N. Y., assignees of said Rider. Patented Dec. 8, 1863:

We claim, first, So constructing and arranging the breech-plate and hammer, as that when the hammer is on the cock and the breech-plate drawn back to open the breech or bore of the arm for the insertion of the cartridge, neither can be made to fly up by the accidental or otherwise touching of the trigger, substantially in the manner described.

We also claim so combining a hammer and an independent breech-plate, as that the hammer shall lock the breech-plate, when both are up against the end of the bore, and the breech-plate lock the hammer when both are swung back to open the bore or chambers, substantially as herein described.

We also claim so constructing and arranging a hammer and an independent breech-plate, as that whilst moving upon different centers and in different arcs, they shall both, when up against the end of the barrel or bore of the arm, occupy substantially the same space, as herein described and represented.

We also claim, in combination with a hammer arranged behind an d acting in rear of the breech-plate, the pivoting of said hammer in front or the pivot of the breech-plate, substantially as and for the purpose described.

EXTENSIONS.

Machine for making Wrought-iron Railroad Chairs.—William Van Anden, Poughkeepsie, N. Y. Patented April 30. 1850. Re-issued Aug. 12, 1853:

I claim, first, The combination of two or more properly-shaped dies between which a chair blank is clamped prior to the cutting of that port on of it which constitutes the lips thereof, substantially in the manner and for the purposes herein described.

Second. I claim automatic shears in combination with properly-shaped dies for clamping a chair blank and cutting the lips thereof, substantially as herein set forth.

Third, I claim such shears when they also act as benders to complete the formation of a chair lip by reason of their having a motion in two directions, substantially in the manner herein specified.

Fourth, I claim a double or parting clamp and die, substantially such as is herein described, so that a chair may be removed from the die upon which it is formed, as herein set forth.

Fifth, I claim discharging a chair from a double or parting die or its equivalent, by hooks or their equivalents, acting to shove a chair off a die, substantially in the manner herein described.

Sixth, I claim, in combination, two clamping dies, one of which acts as a former and divides at proper intervals, shears which also act as benders or their equivalents, and a discharging apparatus acting in respect to each other, substantially in the manner and for the purposes herein set forth.

Construction of the Frame, Roof and Floor of Iron Buildings.—James Bogardus, New York City. Patented May 7, 1850:

I claim the method, substantially as herein described, of making the frame-work of iron houses of more than one story by means of beams cast in sections with end flanches which receive bolts for uniting and drawing them together, and with top and bottom parallel flanches when this is combined with columns, pilasters, or posts cast with horizontal flanches at top and bottom, the top flanch of one column and the bottom flanch of another being secured by bolts to the horizontal flanges of two beams, one column above and the other below the point at which the beams are joined, for the purpose and in the manner substantially as described.

I also claim the method, substantially as herein described, of making the floors by means of thin plates of metal formed with a groove on one edge and tongue on the other, by riveting narrow strips of metal to their under surface and near the edges, the plates so formed being put together breaking joints, substantially in the manner and for the purpose specified.

I also claim the method, substantially as described, of covering the roofs of houses by means of series of thin metal plates formed each with a groove on one edge, by riveting narrow plates or strips to the under surface thereof, that the edge of one plate may fit into the groove on the lower edge of the next above, and so on throughout the series, substantially as described, when these plates are also provided with the lapping pieces or plates riveted or otherwise secured to the upper surface of one end of each plate in each series to lap over the end of the contiguous plates of the next series, the said lapping pieces of each series being also made to lap one over the other, substantially as and for the purpose specified.

Straw-carrier.—William Pierpont, Salem, N. J. Patented May 7, 1850:

I claim an elongated apron or pierced platform hung upon and worked by cranks, connected with and forming a part of the thrashing and separating machine, substantially in the manner and for the purposes herein described.

For the Week ending May 10, 1864.

42,632.—Product from Caoutchouc, &c.—H. A. Ayling, Boston, Mass.:

I claim the improved product resulting from the contact of caoutchouc with a mixture of carbon spirits and chloride of sulphur, substantially as specified.

42,633.—Process for Changing, Curing, or Treating Caoutchouc, &c.—Henry A. Ayling, Boston, Mass.:

I claim the within described process for curing caoutchouc and its compounds, the same consisting of their immersion in, or their contact with a mixture of carbon spirits and chloride of sulphur, and afterward allowing them to dry, substantially as and for the purpose specified.

42,634.—Harness Hook.—S. P. Babcock, Jordan, N. Y.:

I claim a harness hook having its shank, a, provided with lips or guards, d, d, arranged relatively with the hook, c, substantially as and for the purpose herein set forth.

[This invention consists in providing the harness hook with two lips or guards applied to the shank of the hook and opposite the point of the same, whereby the ring can only be fitted in the hook when the former is turned edgewise, and thus presented, when in the hook, from being casually detached therefrom.]

42,635.—Grain Screen.—G. B. Bailey, Greenfield, Ind.:

I claim, first, The rotary screen, B, in combination with the fan, F, and disk, B, provided with one or more openings, all arranged to operate substantially as and for the purpose herein set forth.

Second, The valve, K, fitted in one of the sides of the screen, B, provided with a curved plate, j, substantially as and for the purpose specified.

[This invention consists in the employment or use of a rotating screen in connection with a section fan and a valve, all constructed and arranged in such a manner, that the grain will be deprived of all impurities, and the screen rendered capable of being supplied with grain, with the greatest facility, and the latter when properly screened and cleansed allowed to be very readily discharged from the screen.]

42,636.—Railroad Rail.—Sidney A. Beers, Brooklyn, N. Y.:

I claim the manufacture and use of compressible railroad rails; such compressibility resulting from the irregular form of the web, or shank of the rail, which thus becomes a spring of more or less elasticity, in proportion to the extent of departure from a direct or vertical line; as set forth, or by the use of any other form, which will secure or promote elasticity between the base and face of the rail.

42,637.—Photographic Printing Frame.—Geo. W. and Wm. Bowlsby, Monroe, Mich.:

We claim, first, The protector rings, D, D, with their fastenings, I, I, I.

Second, The pocket, F.

Third, The combined latches, L, L, L, catches, m, m, m, and springs, S, S.

Fourth, The screen, S, C, with the ways, W, W, made substantially in the manner described.

Fifth, The cushioning of both sides of the negative instead of one only, as heretofore done, and which is here completed as shown at C, C, C.

Sixth, We also claim the combination of all the devices for the purposes set forth, in the manner herein above shown.

42,638.—Let-off Mechanism for Power-looms.—Patrick Boylan, Gloucester, N. J.:

I claim the combination of the yarn beam, H, the worm-gear, m, n, the bevel-gear ratchet-wheel, k, l, i, and the oscillating plate, p, the same working on the shaft, o, and being connected with the balanced levers, r, r, and whip-roll, g, all arranged and operating in the manner as described, for the purposes herein specified.

42,639.—Hollow Augers.—Cornelius L. Campbell, Binghamton, N. Y.:

I claim the arrangement of the slides, S, S, and knives or bits, k, k, operated and adjusted by the lever, B, and clamp screw, p, in combination with the frame, A, and tube, P, as and for the purpose set forth.

42,640.—Paddle Wheel.—Albert M. Comstock, Old Lyne, Conn.:

I claim the flat V-shaped floats deepest at the angle of the v, applied to the paddle-wheel with their points outward, and their hollow edges toward the axis of the wheel and strengthened at their joints by plates, c, c, and bolts, l, l, as herein described.

42,641.—Coffin.—E. Hall Covel, New York City:

First, I claim the water-jacket as arranged, for the purpose of preserving the body of the dead, in combination with the coating of felt, wool or other non-conducting substance.

Second, I claim passing a current of external air which has passed the cold tubes or ducts, over the body and in direct contact with it for the purpose herebefore named.

Thirdly, I claim the air-duct, f, or its equivalent when used for the purpose herein described.

Fourth, I claim the detachable ice chamber, a, in combination with the lid of the casket.

Fifth, I claim the ventilating pipe, d, or its equivalent in combination with the outlet, e, or its equivalent as arranged.

42,642.—Steering Apparatus for Steam Vessels.—Samuel F. Covington, New Albany, Ind.:

I claim an auxiliary steering apparatus for steam-boats or vessels, consisting of one or more screws placed transversely under the rake aft of the boat, and constructed and operated in the manner described.

42,643.—Casting Drain Tiles.—John Coy, Oswego, N. Y.:

I claim casting drain tiles from a mixture of coal tar and sand, in an iron mould, substantially such as herein described, coated on its inner surface with a composition of soft soap and sand, tallow and sand, or clay and tallow, in the manner specified.

42,644.—Knife for cutting Tobacco.—Seneca S. Davis, New York City:

I claim the improved method of cutting or granulating leaf tobacco to make what is known to the trade as "Kinnikinnic Smoking Tobacco," by cutting it at one operation, with a double-edged serrated knife as hereinbefore described.

42,645.—Heating Stove.—A. G. Dayton, Maysville, Ky. Ante-dated, May 2, 1864:

I claim, first, The employment or use in a stove or furnace of an internal air-heating chamber, F, provided with a water vessel, I, and provided with one or more hot-air conducting pipes, and a cold air-ducts, a, all arranged substantially as and for the purpose herein set forth.

Second, The outer water-vessel, J, in combination with the inner water vessel, I, when connected together or made to communicate with each other as shown, and both arranged in relation with or applied to the stove, as and for the purpose specified.

42,646.—Cultivator.—E. M. Dever & Ira C. Pratt, Peoria, Ill.:

We claim, first, The rotary guards, a a, mounted upon the stock, P, and employed in combination with inner cultivators, k k, in the manner and for the purposes described.

Second, The foot lever, V, fulcrumed upon the axle and extending forward beneath the bar, m, and backward into convenient proximity with the seat, F, as and for the object specified.

42,647.—Tool-holder.—Wm. W. Draper, Greenfield, Mass.:

I claim the bed-piece, B, and lever, C, in combination with and operated by screw, D, substantially as shown and for the purpose set forth.

42,648.—Many-barreled Fire-arm.—Wm. H. Elliot, Plattsburgh, N. Y.:

I claim, first, So constructing and arranging the sere and tumbler in relation to each other, that when the hammer is thrown back a little by the power of the lock after falling upon the charge, the sere shall fall into the half-cock notch, as and for the purpose herein specified.

Second, The employment of a cocking lever in combination with the hammer and firing point for the purpose of giving motion to the two latter devices, as specified.

Third, The employment of spring, v, for throwing the lever out of the way of the hand while the hammer remains at full cock, when said lever is so arranged that when it is depressed, its thumb-piece occupies a portion of the handle of the pistol, as herein shown.

42,649.—Many-barreled Fire-arm.—Wm. H. Elliot, Plattsburgh, N. Y.:

I claim, first, The employment of a cam or cams for giving motion to one or more firing points so as to change the position of said points from one charge or chamber to the other, as herein set forth.

Second, So constructing and operating the hammer and firing points in relation to each other, that the point which occupies a middle position between the chambers shall not be driven forward by the hammer as herein specified.

42,650.—Photographer's Head-rest.—G. Alexander Emery, Boston, Mass.:

I claim the stand composed of two flat standards, A A, and a cross-head, B, in which the said standards are adjustable, substantially as and for the purpose herein specified.

42,651.—Hame Fastening.—J. B. Tinkelpaugh, Hastings, Minn.:

I claim, first, The tubular support, A, in combination with the notched rod, c, substantially as and for the purpose described.

Second, I claim a metallic tube, A, for the purpose of a support and protection to the operative parts of a hame-fastener, substantially as described.

Third, I claim the removable hook, b, in combination with the tube, A, substantially as described.

42,652.—Collice.—John Flock, Newark, N. J.:

I claim the convex guide, F, constructed substantially as shown, when combined with the block, C, constructed substantially as shown, handle, A, and support, B, as and for the purpose specified.

42,653.—Washing Machine.—J. R. Gill, Charleston, Ill.:

I claim, first, The oscillating shaft, C, in combination with the presser, D, arms, b, and spring arm, b′, constructed and operating in the manner and for the purpose set forth.

Second, The toggle lever, F, in combination with the set screw, e′, sliding box, h, spring, g, oscillating presser, D, constructed and operating in the manner and for the purpose substantially as shown and specified.

42,654.—Machine for making Nuts.—A. B. Glover, Yonkers, N. Y.:

I claim, first, In combination with the dies, the stationary and movable cutters, E1 E2, gage, n, carrier, F, and guide, p, the whole constructed and arranged relatively to each other and to the dies, and operating substantially as herein specified.

Second, The tongue, f, on the bar, C4, and longer mortise, g, in the front die slide, C3, the projection, h, on the bar, C4, and stop, h′, in the frame, and the spring, k, or their equivalents all in combination with each other and with the front and back dies, substantially as and for the purpose herein set forth.

Third, The combination of the shaft, B, cams, C D E, dies, C1, C2, punches, c D1, rod, D4, sliding bar, E3, die-block, G, and cutters, E1 E2, all arranged and operating substantially as specified.

[This invention consists in certain improvements in nut making machinery, whereby, 1st, its construction is considerably simplified; 2d, it is enabled to be run at a very high speed; 3d, the labor of the pressing dies is reduced and they are enabled to be kept cool so that they wear longer, and nuts of better quality are produced.]

42,655.—Blacking Brush.—W. A. Greene, Troy, N. Y.:

I claim the hinged blacking brushes, a a, when constructed so as to enclose a blacking box, in the manner substantially as herein fully shown and for the purposes as described.

42,656.—Piling Old Railroad Rails.—John Griffin & M. P. Weeks, Buffalo, N. Y.:

I claim, first, Forming a pile or fagot of rails whose flange or flanges have previously been sheared off, substantially as described for the purpose set forth.

Second, The combination with a pile of rails so sheared and interlocked, of extra or special pieces, of proper form or forms to fill out or square the pile, substantially as set forth.

42,657.—Corder for Sewing Machines.—Frank Henry, Bridgeport, Conn.:

I claim, first, Attaching the cord-guide, K, to the presser-foot or presser-bar of a sewing machine so that it shall rise and sink therewith, to automatically adjust itself to the thickness of the goods being worked, substantially as herein set forth.

Second, The employment of a swivel joint, G, between the cord-guide, K, and the presser-foot or presser-bar, when the cord-guide, K, is carried vertically with each movement of the presser-bar, as herein set forth.

42,658.—Lantern.—Wm. H. H. Hinds, Groton, Mass.:

I claim the application to hand lanterns of a tube, B, to support the candle, D, and the spring, f, enclosed with in the tube for the purposes herein described.

Also the standard, P, and sleeve, E, for the support of the lantern, as above set forth.

42,659.—Coffin.—Thomas Holmes, M.D., Washington, D. C.:

I claim the arrangement and construction of the deodorizing cases, with their pipes arranged and constructed in the inside of a coffin, as herein described and for the purposes set forth.

42,660.—Time Fuse for Shells.—B. B. Hotchkiss, Sharon, Conn.:

I claim in connection with the fuses of time shells, the time composition, C, fulminate, F, striker, G, interior communicating passages, G′, and exterior lateral discharge passages, I, combined and arranged substantially as and for the purpose herein set forth.

42,661.—Spinning Wheel Head.—T. D. Hotchkiss, Guilford, Conn.:

I claim so applying a spring or springs in combination with the standards, H H, of a spinning wheel head, as to exert an upward pressure on the said standards and preserve a proper tension of the band, b, without the use of screws or any other manual adjustment.

42,662.—Truck for Locomotives.—Wm. S. Hudson, Paterson, N. J.:

I claim, first, in locomotives, disconnecting the forward pair of drivers, G, from the equalizing mechanism which connect the drivers, E and F, and equalizing between the drivers, G, and the bearing wheels

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of the truck, so as to form independent equalizing devices, the forward one of which includes the forward drivers and the truck, substantially as and for the purpose herein set forth.

Second, I claim the transverse bearing bar, J, and lever, K, in combination with the forward pair of drivers, G, and two or more truck wheels, H, and arranged relatively to each other and to the other parts, substantially in the manner and for the purpose herein set forth.

Third, I claim the bushing, L, adapted to move vertically through the framing, B, and arranged relatively to the truck frame, C, and equalizing lever, K, substantially as and for the purpose herein set forth.

Fourth, I claim in combination with the last the rubber spring, M, arranged relatively to the bushing, L, and to the bearing-piece, N, substantially as and for the purpose herein set forth.

42,663.—Thread-tension and Delivery Mechanism for Braiding Machines, &c.—Liveras Hull, Charlestown, Mass.:

I claim the combination and arrangement of the guide roller, d, the frame, C, the bobbin, A (or the spindle, B), the rod, E, and the weight, F.

44,664.—Horse Rake.—Charles Jennings, Easton, Conn.:

I claim the arrangement of the rocking levers, F G, and rod, H, with each other and with the rake-head, D, and seat, I, in the manner herein shown and described.

[This invention consists, 1st, in an improved manner of attaching the wire teeth of the rake to its head, whereby the teeth may be very readily and firmly secured to the head, and also readily detached therefrom in case new ones are required, or any individual tooth in consequence of breakage requires to be replaced by a new one. The invention consists, 2d, in an improved means for easing and lowering the rake and regulating the pressure of the same on the earth and for discharging the load from it.]

42,665.—Ship's Sails and Rigging.—H. C. Johnson, Philadelphia, Pa.:

I claim, first, Spilling lines and brails arranged in respect to the sails substantially in the manner described so that the latter can be reefed or taken in from the deck of the vessel, substantially as and for the purpose set forth.

Second, The top, top gallant and royal sails, when so formed that they can all be attached at their lower outer corners to one yard, substantially as set forth.

Third, The rods, 11, when arranged in respect to the truss, 12, as and for the purpose set forth.

42,666.—Applying Percussion Priming to Cartridge Cases.—Algernon K. Johnston & Lorenzo Dow, New York City:

We claim the application of a cup or cap to the flange of a cylinder with fulminating powder between, substantially as above described, the whole forming a percussion cap or base for a cartridge.

42,667.—Applying Percussion Priming to Cartridges.—Algernon K. Johnston & Lorenzo Dow, New York City:

We claim the use of a disk in connection with a cup, and held in close juxta-position to its base by turning the edges of the cup, substantially as above described, together with a tube communicating with the fulminating powder on the disk at the base of the cup, either through that or through the disk, in the manner above set forth.

42,668.—Improved Fabric for Envelopes of Cartridges.—Algernon K. Johnston & Lorenzo Dow, New York City:

We claim the application to the fabric or tissue forming the covering of cartridges of a substance or preparation which shall thoroughly fill the interstices thereof, and render it firm and impenetrable to the burning gases within the chamber of the gun at the instant of discharge, using for that purpose the aforesaid substances as above described, or any other of similar nature which will produce the intended effect.

42,669.—Coal-mining Apparatus.—R. H. Lamborn, Altoona, Pa.:

I claim, first, The arrangement and combination of the cylinder, D, with the truck, C, in such a manner as to give the piston rod, E (to the end of which the chisel is attached), an angle with the face of the coal, the force of the blow given by said piston rod being regulated by the connection of said rod with cross-head, L, valve rod, I, and adjustable stops, e f, as set forth.

Second, In combination with the foregoing I claim the sectional tracks, constructed, secured, and employed as and for the purpose herein specified.

Third, The combination of wheel, h, pinion, g, and cog wheel, B′, with the sectional tracks constructed as herein described, to give the necessary forward movement to the truck by their connection with valve rod, I, and lever, K.

Fourth, The employment in an apparatus such as described of the exhaust air or steam to keep the channel clear of chips and dust, in the manner described.

42,670.—Trunk.—Henry T. Lee, Jersey City, N. J.:

I claim the projecting caps, D, when constructed in the manner herein shown and described, and combined with the corners of the trunk, as set forth.

[The object of this invention is to produce a barrel-stave trunk, being in form and appearance an exact imitation of an ordinary sole leather trunk, and superior to the same in durability, strength, and cheapness.]

42,671.—Deodorizing Petroleum, &c.—Sylvester Lewis, Rochester, N. Y.:

I claim the use and application of the above ingredients, to wit, ashes and charcoal for the purpose of deodorizing petroleum and kerosene oils, naphtha, benzone, and benzine, and the process of filtering the same through the above ingredients as above set forth, without reference to the exact proportions of such ingredients, which vary somewhat, depending upon the state of the oil to be deodorized.

42,672.—Stop-motion for Knitting Machines.—B. L. Mack, Essex, Conn.:

I claim the locking lever, F, having a heavier arm to be supported by the yarn and a lighter toothed arm in combination with a notched lever, E, connected with a spring shipper, all substantially as and for the purpose herein described.

[This invention consists in the arrangement of a locking device in combination with the belt shipper, whereby the yarn, in passing from the bobbin to the conductor of the machine, is caused to hold up the said lever and makes it lock the shipper in condition to keep the machine running, but when the yarn gives out or breaks, the said lever being no longer held up, is acted upon by gravitation in such manner as to unlock the shipper and allow the machine to be put out of gear by the spring, or its equivalent, provided for the purpose.]

42,673.—Letter Paper.—Richard Magee, Philadelphia, Pa.:

I claim letter or note paper coated as described, for the purpose specified, as a new article of manufacture.

42,674.—Strap-fastener.—Albert J. McWhirt, Galesburg, Ill.:

I claim a band or double loop with a bar which I use for fastening one end of a strap without sticking-buckles or knots, as described in specification herewith filed, and is described as follows:—a flattened metallic bar or double loop, the sides perpendicular to the top and bottom, the width to be equal to the width of the strap to be used, and about three times its thickness, the narrowest sides projecting beyond one end to receive and support a bar around which the strap passes.

42,675.—Hollow Wooden-ware.—Henry Mellish, Walpole, N. H.:

I claim, as a new manufacture, an article of hollow wooden-ware made of a scroll, provided at its upper rim with a bead, a, and there secured by a fastening, b, all as herein described and for the purposes specified.

[This invention consists in the employment or use, for the purpose of manufacturing hollow wooden-ware, of sections taken from a helical strip of wood obtained by cutting spirally round a cylindrical piece of timber.]

42,676.—Combined Beer Faucet and Vent.—John Miller, Buffalo, N. Y.:

I claim, first, The piston cylinder, B, piston, H, and valves, G and K, constructed and operating substantially as herein described.

Second, The vent-valve, M, supported and operated upon by the spring, N, in combination with a faucet, constructed as set forth.

42,677.—Hoop Skirt.—S. A. Moody, New York City:

I claim a hoop skirt having a suitable number of its lower hoops divided at each side and connected by loops, b b, and links, c, all as herein represented and described.

42,678.—Economizing Human Power.—Wm. C. Moores, Bloomfield, Wis.:

I claim, first, The ratchet-wheel, A, with its notches cut in each direction and worked by means of the levers, B B, with the pawls, C C, and springs, D D, as described.

Second, In combination with the above I claim the treadles, E E, attached to the ends of the levers, B B, constructed in box-form, as described.

Third, The seat, F, constructed as described, when used in combination with the ratchet-wheel, A, levers, B B, and pawls, C C, and treadles, E E, and springs, G G, all arranged as set forth.

42,679.—Apparatus for raising Water.—John C. Morris, Cincinnati, Ohio:

I claim the shield, D, for the purposes specified, in combination with the general arrangements, all substantially as and for the purposes set forth in the foregoing specification.

42,680.—Brick Machine.—David Murtha, Philadelphia, Pa.:

I claim, first, The rotating disks, I, arranged and operating in the described combination with the aperture, b, and employed to sever the sheet of clay into strips of width equal to the length of the bricks, as set forth.

Second, I claim the rotating and transversely moving disks, J, operating to sever the strips into widths for bricks, as explained.

Third, I claim the sectional feeding table, E E′ e, constructed, operated, and employed substantially as and for the purpose specified.

42,681.—Pump.—J. P. Nevens, Stark, Maine:

I claim the combination of the inlet ports, e e′, and outlet ports, f f′, with the oscillating plunger, B, pump-box, A, and stock, D, all constructed and operating as and for the purposes shown and described.

[This invention relates to an improvement in that class of pumps in which a hinged plunger is employed, which works in a suitable box, being connected at its loose end, by means of a rod, to a suitable hand lever, so that an oscillating motion can be imparted to it.]

42,682.—Car Spring.—Francis E. Oliver, New York City:

I claim an improved spring composed of two or more metallic C-shaped plates, united at their upper and lower edges by suitable bearing caps, and combined with a central compensating spring of india-rubber, gutta-percha, or other equivalent elastic material, substantially in the manner and for the purpose herein set forth.

42,683.—Letter-clip.—Lewis E. Osborne, New Haven, Conn.:

I claim the combination and arrangement described of the clamps, B and D, with the lever, F, in the manner and for the purpose herein substantially set forth.

42,684.—Measuring Funnel.—Nathaniel Otis, Cook county, Ill.:

I claim, first, The register, E, constructed as and for the purpose herein set forth.

Second, The slide, c, the spring, d, the latch, e, the pawls, I and J, and the register, E, the whole arranged and constructed as and for the purpose herein set forth.

42,685.—Breech-loading Fire-arm.—Charles F. Payne, Gardner, Mass.:

I claim, first, Throwing down the breech-block, D, by means of a spring or springs released by a trigger, in the manner herein substantially described.

Second, I claim operating the discharger, F, by the trigger which releases the breech-block, D, substantially in the manner set forth,

42,686.—Double-acting Submerged Pump.—Andrew J. Reynolds, Sturgis, Mich.:

I claim the cylinder, A, provided with the two ball valves, B and C, in combination with the water passages, D D and d, all arranged to operate in connection with a double-acting hollow discharging piston, as and for the purposes herein set forth.

42,687.—Sewing Machine.—Barton Pickering, West Milton, Ohio:

I claim, first, For the purpose of operating the feed wheel, J, the lever, I, connected to the spindle hub, C, by the screw, f, for its fulcrum, operating substantially as described.

Second, I claim the combination of the screw, l, springs, m and z, the hub, u, with a socket for the supporting piece, k, which has a slot for the reception of an arm, j, of the lever, I, for the purpose of regulating the feed of the material being sewn, substantially as described.

Third, I claim the bracket support, O′, it being held in the socket of the hub, 10, by the adjusting screw, q, for sustaining the feed wheel, J, in position, as desired, in combination with the plane surface of the spindle hub, C, and the spring, p, the different parts being constructed and operating substantially as described.

Fourth, I claim the passing of the thread from the spool, L, through an eye in the lever, H, thence through the slot, r, thence between the head, s, and felt, t, thence over the grooved arm, u, and thence around the grooved wheel, v, for the purpose of unwinding the thread and securing an uniform tension of the thread, substantially as described.

Fifth, I claim the construction of a tension piece, 10, fig. 4, connected to a thread carrier (similar to that patented by Joseph Bond, Jr., May 22, 1855), by a screw, 13, which keeps the said tension piece and spool, 12, in position within the thread carrier, the said tension piece being constructed and operating to regulate the tension of the thread, substantially as described.

Sixth, I claim the construction of a tension piece composed of several parts, namely, the standard, k, the spool arm, M, shaft, s, arm, u, and the pieces of felt, t, in combination with the grooved wheel, v, to aid in the operation of unwinding the thread and to give an uniform tension to the thread, the whole operating substantially as herein set forth.

Seventh, I claim casting the bed-plate, A, with the spindle hub, C, the hub, 10, and the hub, 11, in one piece, the different parts being constructed substantially as herein specified and for the purposes set forth.

42,688.—Revolving Fire-arm.—Henry Reynolds, Springfield, Mass.:

I claim the arrangement of the pin, f, upon the stock, A, at the rear of the recoil shield, C, so as to pass through the said shield, all in the manner herein shown and described.

[This improvement relates to revolving fire-arms for the use of fixed ammunition or other metallic cartridges, and its object is to provide for the expulsion of the discharged shells of such cartridges without disconnecting any portion of the arm.]

42,689.—Buckle.—E. G. Rockwood, Hillsdale, Mich.:

I claim a buckle composed of a frame, a, provided with two cross-bars, b b′, one of which, b′, has a fixed tongue, e′, and a loose tongue, e, attached to it, when the said fixed tongue is employed as the means of attaching the strap to the buckle, and all the parts are constructed and arranged in the manner and for the purposes herein set forth.

[This invention consists in constructing the buckle of a metal loop or frame provided with two cross-bars, a fixed and a movable tongue, all arranged in such a manner that a strap may be secured in the buckle with a loop at each end of it so as to form a combined snap and buckle.]

42,690.—Water Gauge for Steam Boilers.—Theodore Scheffler, Paterson, N. J.:

I claim, first, In water gauges for steam boilers, the slender connection, e, subjected to a constant tensile strain, and arranged to operate substantially in the manner herein set forth.

Second, I claim in connection with the above the combination and arrangement of the guiding pulleys, F H, the wire or cord, e g, the index, M, and the tension pulley and weight, I J, or their equivalents, substantially as and for the purpose herein set forth.

Third, I claim, in a water gage, the passages, b b′ c, and the plug, D, with its several passages, combined and arranged in the manner and so as to serve the general purposes herein set forth.

Fourth, I claim in water gauges the tubes, P P′, and the intervening space, Q, arranged relatively to each other and to the slender wire, e, substantially in the manner and for the purpose herein set forth.

42,691.—Rose Engine.—Anton Schwitter, New York City:

I claim a rosette, A, for an engine-turning machine, composed of two or more adjustable notched rings, a b c, substantially as and for the purpose herein shown and described.

42,692.—Corrugated Beam.—S. J. Seely, New York City:

I claim, first, The combination of two or more corrugated metallic plates, having the inclination of their corrugations on opposite sides, in opposite directions, and diagonal relatively to a horizontal line, with a chord or tie, for the purpose of forming a truss beam or girder, or other similar structure.

Second, I also claim the use of T or angle iron or any other suitable form, in combination with diagonal corrugations, for the purpose of forming a truss beam or girder, or their equivalent, constructed and operating in the manner and for the purpose above described.

42,693.—Pump Valve.—William Sewell & Adam S. Cameron, New York City:

We claim providing or making an india-rubber or other gum valve with a disk of metal or other hard material adapted by coming in contact with the valve seat, or with a suitable guard, to limit or prevent the forcing of the gum into the aperture of the seat, substantially as herein described.

[The object of this invention is to combine in one valve all the advantages of a valve made wholly of india-rubber or other gum and those of a valve made wholly of metal, without the disadvantages of either.]

42,694.—Direct-action Steam Pump.—William Sewell & Adam S. Cameron, New York City:

We claim, first, The combination in direct-action steam pumps, of the separate steam and water piston rods, C D, having a detachable connection with the rock-shaft, H, and the extensible arm, G, or its equivalent, for connecting the said rock-shaft with the water piston rod, substantially as and for the purpose herein specified.

Second, The socket, E, connecting the steam and water piston rods for working the pump by steam, and serving as a guide to the water piston rod in working the pump by hand, substantially as herein described.

42,695.—Machine for making Slats and other Frames.—Francis Shenton, Slatington, Pa.:

I claim the arrangement of the saws, on the adjustable upright shafts, the saws on the horizontal shaft, with the adjustable and sliding carriages, when constructed as described and for the purposes set forth.

42,696.—Car Coupling.—Strickland Slack, Oxford, Pa.:

I claim the piece, B, and spring, b, in combination with the levers, G and K, the bolt, D, and the link, E, substantially as set forth and for the purpose specified.

42,697.—Lock of Fire-arms.—Eben T. Starr, New York City:

I claim, first, The frame having a circular cavity, b b, for the reception of the tumbler, B, and a concentric bearing for one of the journals of the main spindle or arbor of the lock bored out of the solid metal, and having the said cavity fitted with a cap, C, to receive the other journal of the said spindle or arbor, and secured by screws, g g′, which also serve to secure the sere and sere-spring within the circular cavity, as herein specified.

Second, The trigger composed of a straight sliding pin, E, held in place and having its movement limited by the screw, z, entering a groove, l, in combination with the sere, c, and spring, d, when arranged to operate in the manner herein specified.

Third, The employment for securing the check pieces, F F, to the stock of a plate, G, having an annular projection, l, on its face fitted into an annular groove in the frame and check pieces, and held in place by a screw, v, or its equivalent, substantially as herein specified.

42,698.—Repeating Fire-arm.—Eben T. Starr, New York City:

I claim, first, The sliding and rotating plunger, C, provided with a nose, a, ratchet teeth, c, and annular recess n, and fitted to work in the frame, A′, in combination with the hole, f, pawl, d, spring, g, tumbler, E, and hammer, D, when arranged to operate in the manner described.

Second, The notched stud, G, formed on the underside of the barrel, B, at its rear end, sliding bolt, H, and spring, I, in combination with the tilting four-chambered barrel, B, when arranged to operate in the manner and for the purposes described.

42,699.—Barrel-cover.—Hannah Steiger, Washington, D. C.:

I claim an attachable and detachable lock barrel or box-cover, constructed with its frame, bolts, and openings, whereby it can be attached and detached to and from a barrel or box, the whole constructed as and for the purpose specified.

42,700.—Carriage.—L. H. Thomas, Waterbury, Vt.:

I claim the arrangement, construction and combination of the grooved hook, E, flanged standard, D, adjustable spring, C, and dog, K, when arranged, constructed and combined as herein described for the purposes set forth.

42,701.—Manufacture of Hoops for Cannons.—Daniel Treadwell, Cambridge, Mass.:

I claim the method herein described of preparing hoops for hooped cannon, or other similar purposes, by condensing and hardening the material thereof, when below an annealing temperature, by means of compression, or extension, or both, substantially as described; and also, in connection therewith, in heating the same, to a degree less than the annealing point for the purpose of placing them upon the gun, substantially as described.

42,702.—Cartridge-retractor for Breech-loading Fire-arms.—Frederick Trulender, Salem, N. J.:

I claim the fork lever, a, applied to the movable breech-block, and constructed, arranged and operating substantially in the manner described.

42,703.—Drop for hammering Sole Leather.—J. H. Walker, Worcester, Mass.:

I claim hardening, smoothing, and making of uniform thickness, sole and other thick leather, by subjecting it to the action of a drop and block, one or both of which shall be faced with vulcanized rubber, hard leather, or their equivalent elastic and durable material or substance, substantially as described.

42,704.—Medical Compound.—Jonathan Ward, East Hardwick, Vt.:

I claim the above-named compound in all its parts and proportions, fully prepared in the manner above specified.

42,705.—Pumps for Deep Wells.—John Warren, Buffalo, N. Y.:

I claim, first, Two or more valve pistons operated within the tube or pump barrel, when so placed or arranged that, in the up stroke, the liquid to be raised will be divided into equal columns (or nearly so) and the hydrostatic pressure thereby lessened, and so that each valve piston will be required to do an equal proportion of the work substantially as described.

Second, Constructing and operating the valve pistons so that the valve of the upper piston will close first, and the valve of the second piston immediately after, and so on through any number of pistons which may be used, substantially as and for the purposes described.

Third, The construction of the combined valve and piston, C, consisting of the hollow cylindrical part, C′, provided with perforations, C5, at the bottom, and openings, C6, at the top, and sleeve, C2, operating for the purpose and substantially as set forth.

42,706.—Tension-device for Sewing-machine Shuttles.—William Weitling, New York City:

I claim the application to the shuttle bobbin of a sewing-machine of a tension spring, a, when said spring constitutes part of, or is permanently secured to the loose frame, A, inserted within the shuttle, and constructed and operated substantially in the manner and for the purposes described.

42,707.—Boot-blacking Machine.—A. E. White, Rockford, Ill.:

I claim a boot and shoe-polishing machine, composed of two brush wheels, D, G, arranged to revolve relatively with different degrees of speed, in the manner substantially as herein shown and described.

[The object of this invention is to obtain a simple device by which

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boots and shoes may be blackened and polished far more expediently than it can be done by hand.]

42,708.—Water Wheel.—W. Whitney, Manchester, N. H.

I claim, in combination with the peculiarly shaped floats, F, the inverted conical centre, E, and hoop, G, to which the floats are fastened.

In combination with the concave disk or basin around the wheel, I claim the stationary guides, L. and shutes, M, to direct the water on to the wheel, substantially as described.

I claim the cylindrical gate, N, arranged between the curb and the wheel, and fitted to traverse circularly around the wheel, and open and close the shutes or apertures which supply water to the wheel.

42,709.—Machines for making Horse-shoe Nails.—James White, Cleveland, Ohio, and John Malden, Youngstown, Ohio:

We claim, first, The herein-described devices for cutting off the blank and shaping the head at one operation.

Second, We claim the herein-described devices for throwing the blank forward into the lip, b, in the manner specified.

Third, We claim the herein-described devices for holding the nail, while it is being drawn into shape, and releasing the same.

Fourth, We claim the vibrating arms, M, N, O, P, S, T, in combination with the wheel, B, operating as and for the purpose specified.

42,710.—Car Coupling.—Geo. E. Wood, Providence, R. I.

I claim the pivoted pin, C, in combination with the fastening, D, arranged within the drawhead, A, to operate in connection with a link or shackle, B, substantially as and for the purpose set forth.

[This invention relates to an improved car coupling, of that class which connect or couple themselves, and are commonly termed "self-couplings." The invention consists in the employment or use of a pivoted pin in connection with a fastening arranged within a draw-head, in such a manner that the link or shackle in entering the draw-head will engage itself with the pin, and the latter adjust itself to a proper relative position, with the fastening so as to be retained by the latter, the pin being very readily released so as to free the link or shackle whenever it is required to disconnect the coupling.]

42,711.—Wagon Brake.—James F. Woods, 2d, Cohocton, N. Y.:

I claim the application of the straight lever, D, with its right angle arm, d, the same being pivoted to the wagon reach, and operating in the arc of a circle, in the manner as described, for the purposes herein set forth.

42,712.—Jug-top.—Homer Wright, Pittsburgh, Pa.:

I claim forming the body section of a tin jug-top, with the margin or rim, A, figures 3 and 6, of one solid piece of sheet tin, without seam, all for the purpose herein substantially set forth.

42,713.—Printing and Ornamenting Textile Fabrics.—Alexandre Adrien Despreaux, Paris, France:

I claim, as a new article of manufacture, fabrics with metallic threads interwoven therein, printed or ornamented in the manner substantially as herein before set forth.

42,714.—Mode of applying Lubricating Substances.—James Dougall, Stirlingshire, Scotland. Antedated May 3, 1864:

I claim the method herein above-described of applying lubricating matters, the same consisting in using in axle boxes, for railway carriages, &c., hay or straw, or both combined, substantially as herein above described.

42,715.—Bread-cutter.—James Oxley, Sheffield, England. Patented in England, October 30, 1862:

I claim, first, The general constructions, arrangements and combinations of apparatus for cutting, slicing, chopping or mincing bread and other substances, substantially as herein described and illustrated by the drawings.

Second, The combination of a knife-blade with a lever and inclined slotted bracket, so disposed as to give a downward draw-cut for the purposes herein before described.

Third, The combination of a knife with two links or levers, so disposed as to give a downward draw-cut for the purposes herein before described.

Fourth, The combination of an adjustable guage with a lever working or cutting blade, substantially in the manner and for the purpose herein-before described.

Fifth, The application and use of the bar or rib, O, or its equivalent, combined with the knife, C, for separating or clearing the slices when cut, substantially as herein before described.

Sixth, The application and use of an apparatus, constructed substantially as herein before described, for holding the substance to be cut firmly, and moving it forward, step by step, at right angles to the knife.

42,716.—Centrifugal Disks, revolving in Air and Water.—T. W. Rammell, London, England. Patented in England, Nov. 6, 1860:

I claim, first, The arrangement in centrifugal disks, as above described, of the separate radial passages or ducts, b b b, formed by the straight ribs, a a a, attached to the central shaft, A A′, and extending to the circumference; the said ducts having their respective sectional areas uniform, or nearly uniform, throughout, and equal, or nearly equal, to the areas of the corresponding openings which admit the air or fluid at the center.

Second, In combination with the foregoing, I also claim the arrangement of the secondary ribs, d d d, extending from the circumference towards the center, and forming the secondary ducts, b′ b′ b′, as above described, by means of which the centrifugal force of the revolving disk is greatly increased for the expulsion of the air or other fluid at the circumference.

Third, I also claim the improved disk, as above described, with or without a pressure chamber, in combination with the air-tight collars, E E′ E″, fitted around the mouth of the disk, and communicating by suitable tubes or pipes with any reservoir of air, water, or other fluid; all arranged in the manner and for the purposes above described.

42,717.—Gas Producer or Furnace.—Chas. W. Siemens, London, England, and Frederick Siemens, Berlin, Prussia. Patented in England, Jan. 22, 1861:

We claim the gas producer, constructed in manner and so as to operate substantially as described.

42,718.—Manufacture of Gun Barrels.—Jas. Thompson, Bilston, England:

I claim the manufacture of fire-arms, or ordnance, of iron, steel, or other desired metal, without weld or joint of any kind, and hollow, substantially in the manner and by the means herein before described.

42,719.—Safety Doors for Churches.—Alex. H. Wagner, Detroit, Mich.:

I claim the combination of a door, A, opening inward, with a frame, B, hung on hinges and opening outward, substantially in the manner shown and described.

Also, the application to the frame, B, and door, A, constructed as described, of a lever, D, or its equivalent, so that, by a slight touch of said lever, the frame is liberated and allowed to swing open.

[The object of this invention is to construct the doors of a church or other public building, so that the same, in ordinary cases, open inwardly, the same as doors of the usual construction; but, in case of a fire, or other accident whereby the assembly in the building is compelled to break up in great haste, by a slight touch of a lever, or other suitable contrivance, the door is made to swing outward with an increased area, and the obstruction offered by said door to the egress of the people from the building is considerably decreased.]

42,720.—Surface Condenser.—J. J. W. Watson, Paris, and W. H. Smith, Nantes, France:

We claim the use in steam condensers of tubes, or other vessels, filled with wire gauze or its equivalent, substantially in the manner and for the purpose specified.

42,721.—Apparatus for inhaling Gas.—Simeon W. Albee, Charlestown, N. H., assignor to himself and Henry Hodson, Charlestown, Mass.:

I claim the combination of the elastic, inflatable mouth cushion, C, with the mouth-tube or conduit, B, and its valve-case, A, provided with valves or a valve apparatus as described.

And I also claim the combination and arrangement of the two valves, valve-seats, and valve-stem together, and with the valve-case, and a mouth tube, arranged as described.

42,722.—Hydrostatic Balance.—Julius O. Baudissin, assignor to himself and S. Vangraafeiland, St. Louis, Mo.

I claim, first, The hermetical but elastic closing of my water-box by means of gutta percha straps secured to the frame, A, platform, E, and guide-rod, B, by metallic or other rings, f e, and square pieces, d d′, as set forth.

Second, The guide-rod, B, and balancing rods, g g, as set forth.

Third, The regulating screws, g and x, as set forth.

Fourth, The gutta-percha bag, G, on top of the indicator, as set forth, all in the manner and for the purpose as specified above.

42,723.—Washing Machine.—Elliot Dickerman, assignor to Metropolitan Washing Machine Company, Middlefield, Conn.

I claim, in combination with the operative parts of a washing machine, the plunger staff, A, top piece, D, and adjustable piece, E, so arranged and applied as to shorten the cord, C, by the lowering of the adjustable piece, E, and to lengthen it by elevating it to the top piece, D, as herein specified.

42,724.—Coal-mining Apparatus.—G. E. Donisthorpe, W. Firth and R. Ridley, Leeds, England. Patented in England, Nov. 26, 1861.

We claim, first, The combined arrangement of mechanism herein explained, with reference to figures 1 and 2, of the drawings, whereby picks with lever handles are actuated by compressed air engines mounted on and carried by the same carriage as the picks.

And, secondly, We claim the combined arrangement of mechanism herein explained, with reference to figures 4 and 5 of the drawings, whereby cutters are connected with and moved to and fro by the piston-rods of air engines mounted on carriages as herein described.

42,725.—Wheat-cleaning Machine.—John Gaw (assignor to himself and Henry P. Chandler), Ellicott's Mills, Md.:

I claim the combination of the benter cylinder, J, constructed with openings at top and bottom for the passage of an upward current of air, with the bell-shaped fumel, K, for concentrating the draught and directing the air current, as described.

42,726.—Buckle-fastening.—Charles Goodyear, Jr., & Leonard A. Sprague (assignors to Charles Goodyear), New York City:

We claim the forming of a lever buckle in such manner that the same may be secured to leather straps or other articles by a direct hinge joint attachment, i.e., without the intermediary of a connecting strap, as set forth.

We also claim the combination of lever buckles when composed of two parts, as set forth, with a hinge connection on the face of the strap, applied as shown and described, so as not to interfere with the flexibility of the strap.

We also claim the method of securing or fastening lever buckles to straps and other articles by means of staples or their equivalent clamping or clinching devices, when the said staples or their equivalent clamping or clinching devices constitute one of the elements of a hinge.

42,727.—Manufacture of Sugar.—Frederick W. Gossling (assignor to himself, Henry F. Briggs & Lyman Bradley), Buffalo, N. Y.:

I claim as a new article of manufacture a sugar produced from corn and beets.

42,728.—Process of treating Indian Corn and Beet Root to produce Sugar and Sirup.—Frederick W. Gossling (assignor to himself, H. F. Briggs & L. Bradley), Buffalo, N. Y.:

I claim, first, The process of making sugar from corn and beets, substantially as herein described.

Second, The process of making corn sirup from corn in each successive step thereof preparatory to its conversion into sugar, substantially as herein described.

Third, The process of making beet sirup from beets in each successive step thereof, substantially as herein described.

42,729.—Tag Hook.—John Hawks (assignor to Henry Hawks), Brooklyn, N. Y.:

I claim the metallic hook attachment for tags and labels, consisting of the spiral or screw-formed portion receiving the straight or nearly straight part, as and for the purpose specified.

42,730.—Combination of Cradle and Chair.—Alonzo Hi xs (assignor to himself and Henry Lewis), Flushing, N. Y.:

I claim, first, A cradle swinging on a frame or standard, in combination with a chair rocking upon stationary feet or legs, whereby the relative position of the cradle and chair may remain unchanged, so that a connection can be made between the chair and cradle, substantially as specified.

Second, I claim the combination of the table, e, on the arm, d, with the swinging cradle, substantially as specified.

Third, I claim the rocking chair on the legs or feet, f, in combination with the spring, l, extending from such legs, f, to the staple on the back, as specified.

42,731.—Machine for making Bolts and Rivets.—James Howden, Glasgow, Scotland, assignor to Wm. & John Galloway, Manchester, England. Patented in England Feb. 28, 1859:

I claim, first, The combination of two or more revolving die-tables having a vertical axis with a single lever for actuating the heading rams, when the parts are constructed and arranged as and for the purposes herein specified.

Second, In combination with the aforesaid die-tables, heading rams and lever, I claim the bell crank levers, Y, operated in the manner and for the purposes described.

Third, The combination of the oscillating cutting levers, P, eccentric, O, and shaft, K, when constructed and operated as described.

[This invention cannot be well explained without illustration, it appears to be a very ingenious and effective machine.]

42,732.—Oil Box for Railroad Cars.—Edwin F. Hurlbut & Ransom S. Potter (assignors to themselves and Nathaniel S. Bouton), Chicago, Ill.:

We claim, first, Casting or fastening a door or lid into a frame, substantially as shown and for the purposes described.

Second, The combination of the loose lugs or ears, letter D, with the oil box, substantially as shown and for the purposes described.

42,733.—Portable Wet Grain Elevator.—Daniel W. Kellogg & James W. McKee (assignors to A. B. Nimbs & John C. Clifford,) Buffalo, N. Y.:

I claim, first, The oscillating jaws, F, for the purpose of supporting and operating the elevating leg therein, substantially as described.

Second, Extending and operating the elevating buckets below the foot of the leg so that they may easily fill with wet grain and pass up the leg without clogging when combined with the raising, lowering and supporting tackle, H H′, and adjusting rod, I, substantially as set forth.

Third, The combination of the conveyor, T, with a portable elevator, substantially as described.

Fourth, The combination of the blower, M, and cleaning apparatus, L, with a portable elevating machine, substantially as set forth.

42,734.—Manufacture of Elevator Buckets.—A. B. Nimbs (assignor to himself and J. C. Clifford), Buffalo, N. Y.:

I claim an elevator bucket with its strengthening band, constructed and formed from one sheet or piece of metal, substantially as herein described.

42,735.—Clamp for stopping Leaks in Hose Pipes.—C. Rubsam (assignor to himself and Charles P. Hall), Newark, N. J.:

I claim as an improved article of manufacture, a leak-clamp for hose pipes composed of the canvas or fabric, A, with attached metallic strips, B, and clamping screws, b, made and operating as herein shown and described.

[This invention consists of a clamp consisting of two or more pieces of metal which are fastened to the opposite ends of a piece of canvas or leather, or other suitable flexible material, and provided with lugs and screws or with other suitable means whereby the ends of the canvas or other flexible material can be drawn together in such a manner that in case of a leak occurring in the hose the clamp can be readily attached and drawn up tight and the leak can be stopped in a few minutes without taking up the hose.]

42,736.—Hoop Skirt.—Leopold Sanders, New York City, assignor to Thomas B. De Forest, Birmingham, England:

I claim a hoop skirt in which the overlapped ends of the hoops are secured to tapes, A′ and A″, or their equivalent, which slide freely around said hoops, substantially in the manner and for the purpose set forth.

[This invention consists in attaching the ends of the hoops to two tapes at the front of the skirt, said tapes being placed adjoining each other, or side by side, and each having every alternate hoop permanently attached to it, while the intermediate hoops are allowed to slide freely through.]

42,737.—Cultivator.—Samuel A. Tombs (assignor to himself and Samuel N. Purse), Ashley, Mo.:

I claim a cultivator frame constructed of the curved bar, A, united at its rear by the curved cross-bar, b, and provided with the stationary standards and cultivator teeth, a, and pivoted standards or handles, d, the whole constructed and arranged substantially as herein set forth.

DESIGNS.

1,939.—Slipper Pattern.—Edward K. Butler, of Boston, Mass.

1,940.—Clock Case.—Elias Ingraham, Bristol, Conn.

1,941 to 1,943.—Carpet Pattern.—Elemir J. Ney, (assignor to the Lowell Manufacturing Company), Lowell, Mass. (Three cases.)

1,944.—Trade-mark.—William Robotham (assignor to himself and Walter Greacon), Newark, N. J.

[The Re-issues belonging to the list of this date will appear in next week's list.]

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PETTEE'S IMPROVED ENVELOPE.—CAUTION.—The public are hereby cautioned against purchasing, making, vending, or using Envelopes made under or by virtue of any letters patent, alleged to have been recently granted for supposed inventions, which are infringements on the patent issued March 22d, 1859, to S. E. Pettee, and assigned to and now owned by George S. Stimble. All infringements will be proceeded against. E. J. SPANGLER, Sole lessee.

Philadelphia, April 27, 1864. 20 3*

WANTED—A Situation by a person who has an experience of 25 years in the management and construction of Railway Machinery and Marine Engines; has had entire charge of the Machinery Department of several important Railroads; also that of a line of Steamers; can produce the most satisfactory references as to character and ability. Letters addressed to "Machinery," care of C. W. COPELAND, Consulting Engineer, No. 122 Broadway New York, will meet with prompt attention. 19-4*

ORDNANCE OFFICE.

WAR DEPARTMENT,
WASHINGTON, May 1, 1864.

SEALED PROPOSALS will be received at this office until Monday, the 23d day of May, 1864, for the delivery at the following arsenals, Cavalry Accoutrements, United States Cavalry pattern, as hereinafter specified.

At the New York Arsenal, 25,000 sets.
At the St. Louis Arsenal, 5,000 sets.
At the Frankfort Arsenal, 10,000 sets.
At the Alleghany Arsenal, 10,000 sets.

These Accoutrements are to be made in strict conformity with the regulation pattern, which can be seen at the above named places. Each set is to consist of one Sabre-belt and plate complete; one Carbine-sling with swivel complete; one Sabre-knot; one Carbine Cartridge-box; one Pistol Cartridge-box or Pouch; one Belt-holster for Army size revolver, and one pouch with cone pick. All of which are to be made of the best materials and workmanship. The Sabre-belt, Sabre-knot, and Carbine-sling are to be of Buff Leather Blacked, and the Cartridge-boxes, Belt-holster, and Cap-pouch of Pure Oak Tanned Leather.

It is to be distinctly understood that this Department is to have the privilege of inspecting the work done under any contract it may award, in all stages of its progress; especially, to examine the stock before cutting. They are to be subject to the final inspection at the Arsenal, where delivered, before being received by the Government. None are to be accepted or paid for but such as are approved upon inspection.

Deliveries must be made in lots of not less than one-tenth (1-10th) per week of the whole number contracted for; the first delivery to be made on the 20th day of June.

Failure to make deliveries at a specified time will subject the contractor to a forfeiture of the number he may fail to deliver at that time.

The Accoutrements must be boxed in the usual manner; the boxes to be charged cost, to be determined by the inspector.

Bidders will state explicitly the Arsenal, or Arsenals, where they propose to deliver, and the number of sets they propose to deliver at each place, if for more than one.

No bids will be considered from parties other than regular manufacturers, and such as are known to this Department to be fully competent to execute in their own shops the work proposed for. Should any party obtaining a contract offer Accoutrements other than those made in his own shops, they will be rejected, and the contract rendered null and void.

Bidders will enclose with their bids the written acknowledgments of their sureties over their own signatures.

Each party obtaining a contract will be obliged to enter into bond with approved sureties for its faithful execution.

Upon the award being made, successful bidders will be notified, and furnished with forms of contract and bonds.

The Department reserves the right to reject any or all bids if not deemed satisfactory.

Proposals will be addressed to "Brigadier-General George D. Ramsay, Chief of Ordnance, Washington, D. C.," endorsed "Proposals for Cavalry Accoutrements." GEORGE D. RAMSAY,
20 3 Brigadier-General, Chief of Ordnance.

Bids will also be received for these accoutrements to be made of the best grained leather, instead of buff.

FOR SALE.—ONE SECOND-HAND BELLOWS, ALL IRON, viz:—Cylinder, 36-inch diameter, 42-inch stroke, Piston Rod and Head Iron, Ring Packing; 2 Heads and outlet Valve-seats, with connecting Rod, Cross Head, and Guide Rods, or Plates. Price $250. Purchaser must examine them before buying. J. S. M. PECKHAM, Utica, N. Y. 19 3*

GUM-ELASTIC CRUTCHES.—STATE RIGHTS FOR SALE.—These Crutches have a gum tube across the top, making a soft and elastic support to the arm, and enabling the wearer to walk with more comfort than can be derived from any other crutch. For particulars address J. HARTMAN, 123 Pine street, Philadelphia. 19 4*

FOR 75 CENTS, THE JANUARY, FEBRUARY, March, April, and May Nos. of the ILLUSTRATED PHRENOLOGICAL JOURNAL sent by return post; or a year for $2. To secure the Pictorial Double Numbers, with Physiognomy, Ethnology, Phrenology, Physiology, Psychology, and all the portraits of distinguished men, send at once to FOWLER & WELLS, No. 389 Broadway, New York. 19 5*

REYNOLDS' TURBINE WATER WHEELS.—COMPETENT men are employed to measure streams, make plans, and put in flumes, wheels, and gearing. TALLCOT & UNDERHILL, No. 170 Broadway, New York. 19 tf

WATER WHEELS.—OVER 900 OF WARREN'S Turbines are now operating with great success in Cotton, Woolen, Grist, and Saw Mills, &c. For circular, address A. WARREN, Agent, American Water Wheel Company, 31 Exchange street, Boston, Mass. 19 12*

THE "KING MICROSCOPE."—DOUBLE LENS.—Prof. Horsford, of Harvard University, says:—"It works very well, and is got up very neatly." It magnifies 25 diameters. Price 75 cents. Also, "THE BOWEN MICROSCOPE" for 35 cents, or four for $1. One "King" and one "Bowen" Microscope for $1. All mailed free of postage. Address F. D. BOWEN, Box 220, Boston, Mass. 19 4*

E. H. BELLOWS, MANUFACTURER OF PORTABLE and Stationary Steam Engines, Worcester, Mass. 17 10*

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TO MANUFACTURERS OF WAGON AND CARRIAGE Axles.—For sale, the right to use a recently patented machine for turning axles. Will do as much work as twelve engine lathes Address A. B. LAWTHER, Providence, R. I. 18 4*

UNITED STATES GOVERNMENT MUSKET AND Carbine Barrels.—I am constantly manufacturing to order and under contracts the above barrels, which are forged out of the very best Marshal and other imported iron. They never fail to pass Government inspection. Address P. L. HAIN, Wernersville, Berks county, Pa. 18 4*

PORTABLE STEAM ENGINES—COMBINING THE maximum of efficiency, durability and economy with the minimum of weight and price. They are widely and favorably known, more than 300 being in use. All warranted satisfactory or no sale. Descriptive circulars sent on application. Address J. C. HOADLEY & CO. Lawrence, Mass. 17tf

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MANUFACTURERS OF STEAM ENGINES, WITH the link motion, variable cut off of the most approved construction; also Lathes, Mill-gearing, Shafting, Hangers and Machinery in general. Address M. & T. SAULT, New Haven, Conn. 19 tf

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Improved Harrow and Clod-crusher.

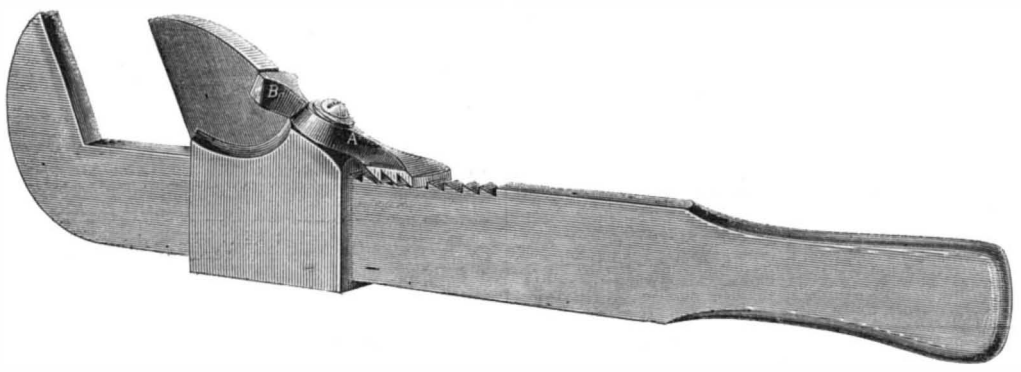
This machine is a combined harrow and clod-crusher, and is intended to effect its object in a simple and expeditious manner. The construction of it will be readily understood by referring to the appended description. The clod-crusher, A, is a strong frame made either of iron or of wood faced with iron, and is jointed to the harrow, B, behind, so as to move up and down easily. The harrow itself follows the clod-crusher, as may be seen by reference to the engraving, and is so arranged that when it is desired to use the clod-crusher alone, the harrow can be turned up over the latter, and thus add its weight to the work; this will generally be found sufficient, but if more pressure is required stones can be added as desired. The harrow is furnished with a handle, C, in in the rear, so that as occasion demands it can be raised to clear the teeth from weeds and grass that have clogged them. This machine will be found a very useful one for the purpose, and may be used as shown for either harrowing or clod-crushing, in combination or separately.

DUBUISSEN'S HARROW AND CLOD-CRUSHER.

The invention was patented through the Scientific American Patent Agency on June 30th, 1863, by Geo. W. Dubuissen, of Jerusalem South, Queens county, N. Y. For further information address the inventor at that place, or R. H. Allen & Co., 189 Water street, New York.

Improved Wrench.

The wrench herewith illustrated is one that will recommend itself as a very complete and useful tool.



SHARP'S ADJUSTABLE WRENCH.

It can be set most readily to any size, and is very strong in the direction of the greatest strain. It is made light and thin so as to go into a narrow opening, and the body is increased in width so as to compensate for the reduction previously mentioned. The one before us is made of malleable iron, but they can be made of wrought-iron as well. The engraving explains itself so clearly that further comment is almost needless. The reader will see that the brace, A, has a grooved foot that fits into corresponding projections on the handle. The center of the brace is fitted with a screw as a pivot to turn on. The brace does not fit the screw, but has a slot in it so that the strain comes upon the upper end, B, and there is also a spring washer under the head of the screw which keeps the brace close up to the handle so that it cannot slip when about to be used. The wrench as thus made is a very convenient one, and was patented on Jan. 5th, 1864, through the Scientific American Patent Agency, by H. Sharp, and assigned to Brown & Heal, Factoryville, Staten Island. For further information address J. M. Brown, 388 Broadway, New York.

Damages of the Sheffield Disaster to be Paid.

The Northern and Eastern counties correspondent of the *London Engineer*, of April 22d, says:—"The Sheffield Waterworks Company held a rather gloomy meeting on Monday. The directors intend to admit the liability of the company, and in order to meet the claims upon them, they propose to ask Parliament for powers to raise £400,000, and to issue a special commission to assess the compensation due to the sufferers by the flood. The chairman briefly referred to the overwhelming calamity that had come upon the company since their last meeting, and stated, on the part of the directors, that they were desirous of satisfying, to the fullest possible extent, consistent with justice, all the claims that could be brought against them. The report recommended that no dividend should be declared. Mr. M'Turk moved that the usual dividend of five per cent., which had been earned previous to Dec. 31st, should be declared. The law clerk read a clause from the opinion of counsel' setting forth that shareholders were liable to the extent of their shares, but not further; and as regarded the question of a dividend, the attorney-general, and other eminent barristers, who had given the opinion, added that the company would act very injudiciously if they divided any sum at present. It was urged in the course of conversation, by those favorable to the declaration of a dividend, that many widows and orphans were dependent upon the annual dividends of the company, and that 'no dividend' meant to them the extreme of distress and privation; but it was felt that under present circumstances, however great the individual hardships might be and would be in many cases, it would not be right to declare a dividend in the face of the application that is to be made to Parliament. The motion was withdrawn by Mr. M'Turk, and the report of the directors was adopted."

Effect of Vibrations on Iron Girders.

In the London *Artizan* we find a full report of an elaborate series of experiments undertaken by William Fairbairn, LLD., F.R.S., to ascertain the effect of vibrations on iron girders when subjected to only a portion of the breaking strain. A beam, 16 inches in depth with a clear span of 20 feet, was so arranged that the weight could be let down upon it suddenly, and then caused to vibrate. The experiments commenced March 21, 1860, and continued to Jan. 9, 1862; the changes in the load amounting to upwards of 3,000,000.

Mr. Fairbairn concludes that iron girders in railroad bridges and other places where they are subjected to sudden changes of load and to vibrations, cannot be loaded with safety to one-third of the breaking strain, but that with one-fourth of the breaking strain they will last for hundreds of years.

THE

Scientific American,

FOR 1864!

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The publishers of the SCIENTIFIC AMERICAN respectfully give notice that the Tenth Volume (New Series) commenced on the first of January. This journal was established in 1845, and is undoubtedly the most widely circulated and influential publication of the kind in the world. In commencing the new volume the publishers desire to call special attention to its claims as

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